

1 OF 5

TMC
TSTE - 10K

1. GENERAL INFORMATION
2. PRE-INSTALLATION 3. INSTALLATION
4. PRE-OPERATIONAL CHECKOUT

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23084

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FOREWORD

The complete set of technical manuals describing Model TSTE-10K Technimatic Transmitter is divided into five groups as listed below. The manuals in each group are bound together.

| <u>NAVSHIPS NO.</u> | <u>TITLE</u> |
|---------------------|--------------------------------------------------------------------------------------------|
| 0967-188-2010 | Technical Manual for Auxiliary Frame, Technimatic Transmitter Model TSTE-10K Volume 1 of 2 |
| | Technical Manual for Sideband Exciter, Model CMRA-1 |
| | Technical Manual for RF Translator, Model CHGR-3A |
| | Technical Manual for Control Synthesizer, Model HFSA-2 |
| | Technical Manual for Control Terminator, Model LRCD-1 |
| | Technical Manual for Power Supply, Model HFP-1 |
| | Appendix, Auxiliary Frame, Technimatic Transmitter TSTE-10K |
| 0967-188-2020 | Technical Manual for Main Frame, Technimatic Transmitter Model TSTE-10K Volume 2 of 2 |
| | Technical Manual for High Voltage Rectifier, Model AX-103 |
| | Technical Manual for Standing Wave Control Unit, Model SWCU-1 |
| | Technical Manual for Meter Panel, Model AX-107 |
| 0967-188-2030 | Installation Manual for Technimatic Transmitter Model TSTE-10K |
| 0967-188-2040 | Operator's Manual for Technimatic Transmitter Model TSTE-10K |
| 0967-188-3010 | Technical Manual for Transmitter Control Model LRCM-1 |
| | Technical Manual for Transmitter Control Module, AX-568 |
| | Technical Manual for Remote Gain Control, AX-614 |

T-AGM 1 3 4 5 6 7 8 9 10
11 12 13 14 15 16
17 18 19 20 21

★

UNCLASSIFIED

INSTALLATION MANUAL
for
TECHNIMATIC TRANSMITTER
MODEL TSTE-10K



THE TECHNICAL MATERIEL CORPORATION
MAMARONECK, N.Y. OTTAWA, ONTARIO

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SECTION I - GENERAL INFORMATION

NOTICE

THE CONTENTS AND INFORMATION CONTAINED IN THIS INSTRUCTION MANUAL IS PROPRIETARY TO THE TECHNICAL MATERIEL CORPORATION TO BE USED AS A GUIDE TO THE OPERATION AND MAINTENANCE OF THE EQUIPMENT FOR WHICH THE MANUAL IS ISSUED AND MAY NOT BE DUPLICATED EITHER IN WHOLE OR IN PART BY ANY MEANS WHATSOEVER WITHOUT THE WRITTEN CONSENT OF THE TECHNICAL MATERIEL CORPORATION.

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SECTION 1

GENERAL INFORMATION

1-1. PURPOSE.

The Technimatic transmitter, Model TSTE-10K, figure 1-1, is a general purpose remote-controlled sending device that has several modes of operation: AME (AM equivalent), CW (continuous wave), FAX (facsimile), FSK (frequency-shift keying), four channel ISB (independent sideband), SSB (single sideband), and pulse. The single-ended power output is rated at 10-kw (kilowatts) PEP (peak envelope power) on a standard two-tone test. The frequency range of the transmitter is 2 to 30 mc (megacycles) adjustable in 100-cycle increments.

1-2. DESCRIPTION.

The transmitter is physically housed in two mechanical frame assemblies. These are identified as the auxiliary and main frames (see figure 1-2). Essentially, the auxiliary frame houses the exciter. The main frame effectively houses a driver amplifier, a 10-kw PA (power amplifier), and an associated 10-kw PS (power supply).

1-3. LEADING PARTICULARS.

Table 1-1 lists logistic type leading particulars of the transmitter. Characteristics listed cover primary power, overall equipment dimensions, gross weight, and air cooling.

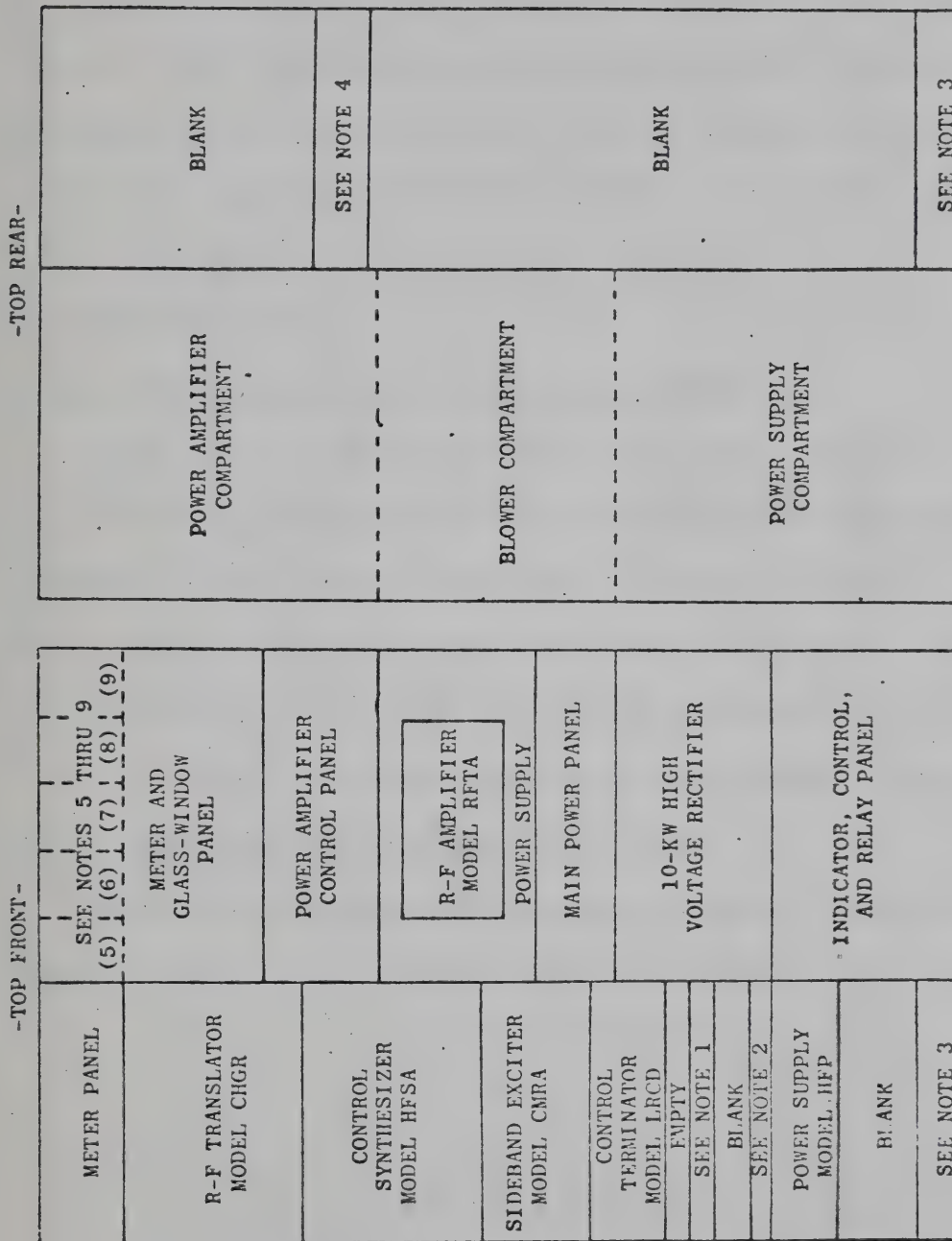
1-4. CAPABILITIES AND LIMITATIONS.

Table 1-2 lists operation capabilities and limitations of the transmitter. Data covers specific functional and environmental characteristics.

TABLE 1-1. LEADING PARTICULARS

| NOMENCLATURE | | POWER REQUIREMENTS | | | | DIMENSIONS IN INCHES | | | WEIGHT IN LBS. |
|---------------------------------------------------|---------------------------------------|--------------------|-------------|-----|----|----------------------|--------|--------|----------------------|
| FORMAL | COMMON | VOLTS | AMP | W | PH | FREQ IN CYCLES | HGT | W | D |
| Technimatic Transmitter, Model TSTE-10K | Transmitter or TSTE | a/b/c | - | - | - | - | 80 | 54-1/2 | 40-1/2 |
| Frame Assembly, Electrical Equipment | Auxiliary frame | a/b | - | - | - | - | 73 | 22-1/2 | 40-1/2 |
| R-f Translator, Model CHGR-3A | R-f translator or CHGR | d | - | - | - | - | 10-1/2 | 19 | 19-1/2 |
| Control Synthesizer, Model HFSA-1 | Control synthesizer or HFSA | e | - | - | - | - | 10-1/2 | 19 | 20-1/2 |
| Sideband Exciter, Model CMRA-1 | Sideband exciter or CMRA | f | - | - | - | - | 7 | 19 | 20 |
| Extended Local Control Terminator Model LRCD-1 | Control terminator or LRCD | (none) | - | - | - | - | 5-1/4 | 19 | 17-1/2 |
| Adapter Panel Assembly, Model AX-570 | Adapter panel | (none) | - | - | - | - | 1-3/4 | 19 | 3 |
| Control Panel Assembly, Model AX-560 | Control panel | (none) | - | - | - | - | 1-3/4 | 19 | 4 |
| Power Supply, Model HFP-1 | Power supply or HFP | 120/ 230 | 6.5/ 3.2 | 750 | 1 | 60 | 5-1/4 | 19 | 19-5/8 |
| Auxiliary Power Panel, Model APP-11 | Auxiliary power panel or APP | a/b | - | - | - | - | 3-1/2 | 19 | 13-1/4 |
| Standing Wave Control Unit, Model SWCU-1 | Standing wave control unit or SWCU | 120/ | 1/0.5 | - | 1 | 60 | 3-1/2 | 19 | 10-1/4 |
| Frame Assembly, Electrical Equipment | Main frame | c | - | - | - | - | 73 | 32 | 40-1/2 |
| IPA Second Amplifier, Model AZ105 | | | | | | | 6-1/4 | 13 | 5-3/8 |
| IPA Load Amplifier, Model AZ107 | | | | | | | 6-1/4 | 13 | 5-3/8 |
| • IPA Tune Amplifier, Model AZ106 | | | | | | | 6-1/4 | 13 | 5-3/8 |
| PA Load Amplifier, Model AZ108 | | | | | | | 6-1/4 | 13 | 5-3/8 |
| PA Tune Amplifier, Model AZ109 | | | | | | | 6-1/4 | 13 | 5-3/8 |
| R-f Amplifier, Model RFTA-1 | R-f amplifier or RFTA | | | | | | 6-1/4 | 13 | 5-3/8 |
| Power Supply AP-126 | Low-voltage power supply | | | | | | 8-3/4 | 18 | 19 |
| High Voltage Rectifier AX-103 or | 10-kw high voltage rectifier | 6222 | | | 3 | 60 | 11-1/4 | 28-3/4 | 21 |
| Solid State Power Supply Model HVRC-2 | Solid state power supply | 6222 | | | 3 | 60 | 10-3/4 | 28-3/4 | 16-3/4 |
| | | | | | | | 10-3/4 | 28-3/4 | 16-3/4 |

^a Instrument power: 120 volts $\pm 5\%$, single phase, 60 cycles $\pm 5\%$, externally regulated^b Utility power: 120 volts, single phase, 60 cycles, externally regulated^c 440 volts, three phase, 60 cycles, 30 amperes per phase, power factor approximately 0.97, "wye" input cabling.^d +200 and -105 volts (regulated); and 120 or 240 and 6.3 volts, single phase, 60 cycles. Powered by the HFP.^e +200 volts (regulated); and 6.3 volts, single phase, 60 cycles. Powered by the HFP.^f 120 or 240 volts, single phase, 60 cycles. Powered by the HFP



- 350-2
- NOTES
1. ADAPTER PANEL ASSEMBLY MODEL AX-570
 2. CONTROL PANEL ASSEMBLY MODEL AX-560
 3. AUXILIARY POWER PANEL APP
 4. STANDING WAVE CONTROL UNIT MODEL SWCU
 5. IPA 2ND AMPLIFIER MODEL AZ105
 6. IPA LOAD AMPLIFIER MODEL AZ107
 7. IPA TUNE AMPLIFIER MODEL AZ106
 8. PA LOAD AMPLIFIER MODEL AZ108
 9. PA TUNE AMPLIFIER MODEL AZ109

Figure 1-2. General Component Identification.

1-5. EQUIPMENT SUPPLIED.

Table 1-3 lists all major equipment supplied by crate number, content, quantity, TMC part number, and reference symbol designation. Also a brief function of each item is provided. Subassemblies of assemblies listed are not called-out; identification of subassemblies can be obtained by referring to the applicable equipment manual (refer to paragraph 1-7). Spare parts are not included in the table.

1-6. EQUIPMENT REQUIRED BUT NOT SUPPLIED.

Table 1-4 lists equipment required to install and maintain the equipment. The non-specialized tools and test equipment are not supplied, since an equipped maintenance shop should contain them. Some cables are also listed; these are not provided, since their length varies from site to site. The tools and test equipment are for isolating a fault to a specific equipment in a transmitter; additional items are listed in the supporting equipment manuals. (refer to paragraph 1-7).

1-7. ASSOCIATED EQUIPMENT MANUALS.

Table 1-5 lists associated equipment manuals. The list should facilitate locating information on a particular equipment in the transmitter.

TABLE 1-2. CAPABILITIES AND LIMITATIONS

| CAPABILITIES | LIMITATIONS |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Functional Characteristics: | |
| Types of operation: | AME (AM equivalent), CW (continuous wave), FAX (facsimile), FSK (frequency-shift keying), ISB (independent sideband), and pulse. |
| Power: | |
| Dissipation | Approximately 22,500 watts (maximum). |
| Factor | Approximately 0.97 |
| Output | Nominally rated at 10,000 watts PEP (peak envelope power); 5,000 watts average. |
| Output Stability | Alde (automatic load and drive control) maintains optimum linearity and constant output power level |
| Frequency: | |
| Range | 2 to 30 megacycles. |
| Stability | Approximately 1 part in 10^8 per day |
| Standard | 1 megacycle |
| Band width | Approximately 12,000 cycles (total) |
| Tuning: | 100-cycle increments. |
| Manual | All tuning and band-switching controls are on front panel. Manual override switching permits complete manual operation. |
| Remote | Remote tuning of the exciter equipments causes power amplifier stages to tune automatically. |
| Manual/Automatic | Manual operation of the exciter equipments and automatic response of power amplifier stages. |

TABLE 1-2. CAPABILITIES AND LIMITATIONS (CONT)

| CAPABILITIES | LIMITATIONS |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal time for remote | 30 seconds |
| Inputs: | |
| Impedance | 600 ohms per input channel |
| Level | Minus 26 dbm to plus 5 dbm |
| Number | 4-input channels. |
| Voltage standing wave protection | Adjustable protection circuit permits vswr ratios of up to 2.1 to 1; exceeding adjusted ratio disables the transmitter. |
| Safety protection | Electro-mechanical overload and interlock devices protect personnel and equipment. When a device is activated, high voltage is short-circuited. |
| Environmental characteristics: | |
| Operating temperature | 0° to 50°C (32° to 122°F) |
| Relative humidity | Up to 90%. |
| Cooling | Filtered forced-air cooling |

TABLE 1-3. EQUIPMENT SUPPLIED

| SHIPPING CRATES | | | DESIGNATION | | FUNCTION |
|-----------------|----------------------------------------------|-----|---------------|-----|-----------------------------------------------------------------------|
| NO. | CONTENTS | QTY | TMC P/N | SYM | |
| 1 | Loose Items: | | | | Cable for testing servo amplifiers |
| | 1. Cable, Junction Box Assembly ^a | 1 | A-4369 | | |
| | 2. Bag-Mounting kit, Frame to Base | | | | Auxiliary and main frame to base, mounting hardware |
| | Screw, Hexhead | 12 | SCHH5013SS32F | | |
| | Washer, Lock | 12 | LWS37MRN | | |
| | Washer, Flat | 12 | FW37HBN | | |
| | Nut, Pln, Hex-head | 12 | NTH5013SS24 | | |
| | 3. Bag-Mounting kit, Grounding Strap | | | | Ground strap mounting hardware |
| | Nut, Hexhead | 1 | NTH6211BN32 | | |
| | Washer, Lock | 1 | LWS62MRN | | |
| | Washer, Flat | 2 | FW62HBN | | |
| | 4. Bag-Mounting kit, Line Filterboard | | | | Line filterboard, cover support brackets, and cover mounting hardware |
| | Screws, Binder-head | 5 | SCBP1032BN6 | | |
| | | 1 | SCBP1032BN9 | | |
| | | 4 | SCBP1032BN12 | | |
| | Washer, Lock | 10 | LWE10MRN | | |
| | Washer, Flat | 10 | FW10MRN | | |
| | 5. Bag-Mounting kit, Frame to Frame | | | | Auxiliary frame to main frame mounting hardware |
| | Screw, Hexhead | 10 | SCHH3118SS16 | | |
| | Washer, Lock | 10 | LWS31MRN | | |
| | Washer, Flat | 10 | FW31HBN | | |
| | 6. Bag-Mounting kit, Main Power Transformer | | | | Main Power transformer 7800 to frame mounting hardware |
| | Screw, Hexhead | 4 | SCHH5013SS46 | | |
| | Washer, Lock | 4 | LWS50HBN | | |
| | Washer, Flat | 4 | FW50MRN | | |
| | 7. Bag-Mounting kit, Equipment to Frame | | | | Auxiliary frame equipment (drawers) to frame mounting hardware |
| | Screw, Binder-head | 28 | SCBP1032BN8 | | |
| | Washer, Fiber | 28 | WA-101-5 | | |

^a Provided in crate 1 only.

TABLE 1-3. EQUIPMENT SUPPLIED (CONT)

| SHIPPING CRATES | | DESIGNATION | | | FUNCTION |
|-----------------|---------------------------------------------------------------------|-------------|--------------|------|---------------------------------------------------------------------|
| NO. | CONTENTS | QTY | TMC P/N | SYM | |
| 1 (cont) | 8. Bag-Mounting kit, Transmitter Top | | | | Transmitter top to frame mounting hardware |
| | Screw, Hexhead | 12 | SCHH2520SS24 | | |
| | Washer, Lock | 12 | LWS25MRN | | |
| | Washer, Flat | 12 | FW25HBN | | |
| | 9. Bag-Mounting kit, Trim Strip | | | | Trim strip mounting hardware |
| | Screw, Binder- head | 33 | SCBP0832BN6 | | |
| | Nut, Speed | 12 | NT-108-5 | | |
| | 10. Bag-Mounting kit, Exterior Side Panels to Frame | | | | Exterior side panels to frame mounting hardware |
| | Screw, Hexhead | 20 | SCHH3118SS24 | | |
| | Washer, Lock | 20 | LWS31MRN | | |
| | Washer, Flat | 20 | FW31HBN | | |
| | 11. Bag-Mounting kit, Rear Panels to frame | | | | Rear panels to auxiliary and main frames mounting hardware |
| | Screw, Panel fastening | 22 | | | |
| | Washer, Fiber | 22 | | | |
| | Washer, Screw- Retaining | 22 | | | |
| | Nut, Hexhead | 22 | NTH1032BN12 | | |
| | 12. Bag-Mounting kit, Transmitter to Transmitter ^a | | | | Transmitter to transmitter mounting hardware |
| | Screw, Hexhead | 30 | SCHH3118SS52 | | |
| | Washer, Lock | 30 | LWS31MRN | | |
| | Washer, Flat | 30 | FW31HBN | | |
| | 13. Line Filterboard | .1 | A-3479 | None | Line filter for a-c instrument voltage |
| | 14. Bracket, Cover Support, Top | 1 | MS-3689 | None | Line Filterboard A-3479 safety brackets and cover |
| | 15. Bracket, Cover Support, Bottom | 1 | MS4517 | None | |

^a Provided in crate 1 only.

TABLE 1-3. EQUIPMENT SUPPLIED (CONT)

| SHIPPING CRATES | | QTY | DESIGNATION | | FUNCTION |
|-----------------|-------------------------------|-------|--------------|-------------------|-----------------------------------------------------------------------------------------------------------------|
| NO. | CONTENTS | | TMC P/N | SYM | |
| 1 (cont) | 16. Cover, Filter-board | 1 | LD-1392 | None | |
| | 17. Resistors, Fixed | 1 | RW-118F-502 | R802 | |
| | | 7 | RW-118F-183 | R803 thru R809 | |
| | | 2 | RW-122-1-405 | R810 and R811 | |
| | | 2 | RW-119G-181 | R812 and R813 | |
| | | 2 | RW-122-3-604 | R814 and R815 | |
| | 18. Tubes, Electron | 1 | 4CX5000A | V900 | 10-kw PA tube |
| | | 1 | 5CX3000A | V203 | R-f amplifier power amplifier tube |
| | | 6 | 872-A | V600 thru V605 | 10-kw high voltage rectifier tubes |
| | 19. Plugs, Electrical | 2 | PL-134-NG | None | Male and female plugs for an ex- tension cord that plugs into jacks on the auxiliary power panel |
| | | 2 | PL-218 | None | |
| | 20. Plugs, Button 1/2 inch | 8 | HB-101-3 | | Cover up side panels and top to frame mounting holes |
| | 7/8 inch | 32 | HB-101-6 | | |
| | 21. Instruction Manuals | 1 set | | | |
| | 22. Warranties | | | | Electron tube warranties |
| | | 1 | 4CX5000A | V900 | |
| | | 1 | 5CX3000A | V203 | |
| | 23. Test Data | 1 set | | | |

TABLE 1-3. EQUIPMENT SUPPLIED (CONT)

| SHIPPING CRATES | | QTY | DESIGNATION | | FUNCTION |
|-----------------|----------------------------------------------------|-----|--------------|------|----------|
| NO. | CONTENTS | | TMC P/N | SYM | |
| 2 | Exterior Trim, Panels Top, and Base Shield | | | | |
| | 1. Trim | | | None | |
| | a. Front Right Side | 1 | MS-1633 | | |
| | b. Front Left Side | 1 | MS-1634 | | |
| | c. Top Front | 1 | MS-4202 | | |
| | d. Front Bottom | 1 | MS-1636 | | |
| | e. Hinged, Left Front | 1 | MS-1637 | | |
| | f. Hinged, Right Front | 1 | MS-1920 | | |
| | 2. Panels | | | None | |
| | a. Right Side | 1 | MS-4462 | | |
| | b. Left Side | 1 | MS-4463 | | |
| | c. Top Rear, First Frame | 1 | MS-4465 | | |
| | d. Bottom Rear, First Frame | 1 | MS-4466 | | |
| | e. Rear, Second Frame | 1 | MS-2748 | | |
| | 3. Top | 1 | MS-4464 | None | |
| | 4. Shield, Base with: Filter and Duct Flange | 1 | MS-4391 | None | |
| | | 1 | AD-103-21 | None | |
| 3 | Auxiliary Frame with: | 1 | | | |
| | 1. Meter Panel Assembly | 1 | | | |
| | 2. Adapter Panel Assembly | 1 | Model AX-570 | | |
| | 3. Control Panel Assembly | 1 | Model AX-560 | | |
| | 4. Standing Wave Control | 1 | Model SWCU-1 | | |
| 4 | 5. Auxiliary Power Panel | 2 | Model APP-11 | | |
| | Main Frame with: | 1 | | | |
| | 1. Indicator, Control, and Relay Panel | 1 | | | |

TABLE 1-3. EQUIPMENT SUPPLIED (CONT)

| SHIPPING CRATES | | QTY | DESIGNATION | | FUNCTION |
|------------------|----------------------------------------|-----|---------------|------|-----------------------------------------|
| NO. | CONTENTS | | TMC P/N | SYM | |
| 4 (cont) | 2. 10-kw Power Amplifier Section with: | | | | |
| | a. IPA 2ND Amplifier | 1 | Model AZ105 | | |
| | b. IPA Load Amplifier | 1 | Model AZ107 | | |
| | c. IPA Tune Amplifier | 1 | Model AZ106 | | |
| | d. PA Load Amplifier | 1 | Model AZ108 | | |
| | e. PA Tune Amplifier | 1 | Model AZ109 | | |
| 5 | Main Power Transformer | 1 | TF203 | T800 | Main power transformer T800, main frame |
| 6 | Drawer Assemblies: | | | | |
| | 1. Sideband Exciter | 1 | Model CMRA-1 | | |
| | 2. Control Terminator | 1 | Model LRCD-1 | | |
| | 3. Power Supply | 1 | Model HFP-1 | | |
| 7 | 1. R-f Translator | 1 | Model CHGR-3A | | |
| | 2. Control Synthesizer | 1 | Model HFSA-2 | | |
| 8 | 10-kw High Voltage Rectifier | 1 | AX-103 | 600 | |
| 9 | R-f Amplifier | 1 | Model RFTA-1 | | |
| 10 thru 18 | Same as crates 1 thru 9, respectively | | | | |
| 19 thru 27 | Same as crates 1 thru 9, respectively | | | | |
| 28 thru 36 | Same as crates 1 thru 9, respectively | | | | |
| 37 thru 45 | Same as crates 1 thru 9, respectively | | | | |
| 46 thru 54 | Same as crates 1 thru 9, respectively | | | | |

TABLE 1-4. EQUIPMENT REQUIRED BUT NOT SUPPLIED

| EQUIPMENT | PURPOSE |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 1. Box Wrenches, assorted sizes | Fastening mounting hardware |
| 2. Open End Wrenches, Assorted sizes | Same as item 1 |
| 3. Spin Tights, sizes: 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 9/16 | Same as item 1 |
| 4. Socket Wrench Set, socket sizes to 1-1/8 | Same as item 1 |
| 5. Screw Drivers, Flat Blade, assorted sizes | Same as item 1 |
| 6. Screw Drivers, Phillips-Blade, assorted sizes | Same as item 1 |
| 7. Crowbar | Open packing crates |
| 8. Fork-Lift or equivalent | Moving heavy objects (e.g. packing crates and voltage transformers) |
| 9. Low-Speed Electric Drill and carborundum bit or equivalent | Drilling equipment anchoring holes |
| 10. Case cutter | Open cardboard packing cases |
| 11. Nail puller | Open packing crates |
| 12. Pair of snips | Cutting strap bands |
| 13. Standard QDL series connector plug | Connector plug for connecting one end of output transmission line to the transmitter |
| 14. Coaxial transmission line ^a | Output transmission line |
| 15. A-c input cabling ^a | <p>a. Main a-c input (440V at 50A) for transmitter</p> <p>b. Auxiliary a-c input (115V at 5A) for auxiliary power panel</p> |

TABLE 1-4. EQUIPMENT REQUIRED BUT NOT SUPPLIED (CONT)

| EQUIPMENT | PURPOSE |
|----------------------------------------------------------------|---------------------------|
| 16. 100-watt soldering gun or equivalent and resin-core solder | Miscellaneous connections |
| 17. Simpson Model 260 (volt-ohm-meter) | Testing |
| 18. Spectrum Analyzer TMC Model PTE-3 or equivalent | Same as 17 |

^aLength of cabling determined by transmitter location.

TABLE 1-5. ASSOCIATED EQUIPMENT MANUALS

| MANUAL | VOLUME |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical Manual for Auxiliary Frame, Technimatic Transmitter, Model TSTE-10K | <div style="border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; height: 100px; position: relative;"> <div style="position: absolute; right: 10px; top: 50%; transform: translateY(-50%);">Vol 1</div> </div> |
| Technical Manual for Sideband Exciter, Model CMRA-1 | |
| Technical Manual for RF Translator, Model CHGR-3A | |
| Technical Manual for Control Synthesizer, Model HFSA-2 | |
| Technical Manual for Control Terminator, Model LRCD-1 | |
| Technical Manual for Power Supply, Model HFP-1 | |
| Appendix, Auxiliary Frame, Technimatic Transmitter, TSTE-10K | |

TABLE 1-5. ASSOCIATED EQUIPMENT MANUALS (CONT)

| MANUAL | VOLUME |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Technical Manual for Main Frame, Technimatic Transmitter, Model TSTE-10K</p> <p>Technical Manual for High Voltage Rectifier Model AX-103</p> <p>Technical Manual for Standing Wave Control Unit, Model SWCU-1</p> <p>Technical Manual for Meter Panel, Model AX-107</p> <p>Installation Manual for Technimatic Transmitter, Model TSTE-10K</p> <p>Operator's Manual for Technimatic Transmitter, Model TSTE-10K</p> <p>Technical Manual for Transmitter Control, Model LRCM-1</p> <p>Technical Manual for Transmitter Control, Module, AX-568</p> <p>Technical Manual for Remote Gain Control, AX-614</p> | <div data-bbox="938 374 1014 629" style="border: 1px solid black; width: 50px; height: 130px; position: relative;"> <div data-bbox="1014 482 1171 511" style="position: absolute; left: 50px; top: 50px;">Vol 2</div> </div> |

SECTION 2

PRE-INSTALLATION

2-1. INTRODUCTION.

This section presents pre-installation considerations that warrant planning before undertaking transmitter assemblage. In most instances, the information presented is for a typical shipboard installation, although it may be applicable to a land installation.

2-2. ENVIRONMENT. .

The equipment operates under a broad range of environmental conditions (refer to table 1-2). Criteria for ambient operating conditions might be the same as that used for personnel habitability. However, locating the equipment in or near heat zones should be avoided to maintain stable and efficient operation. Low humidity ventilation must be provided to dissipate internally generated heat. An air duct system must be employed to provide adequate ventilation. Specific personnel and equipment cooling considerations are discussed in paragraph 2-3. Dimensions for fabricating equipment air ducts are provided in paragraph 2-4.

2-3. PERIPHERAL AIR-CONDITIONING.

Equipment cabinets are semi-pressurized and forced-air cooled by self-contained blowers. Approximately 90 percent of the internally generated heat will be dissipated through exhaust ports. The remaining 10 percent is radiated by the equipments surface area. In the case of multiple equipments, the cumulative effect of surface radiated heat may be uncomfortable for personnel; adequate room air-conditioning should be provided.

2-4. DIMENSIONS.

Figure 2-1 illustrates dimensions for a transmitter, additional clearance considerations are discussed in following paragraphs. Additional dimensions are given in table 1-1 and Section 3.

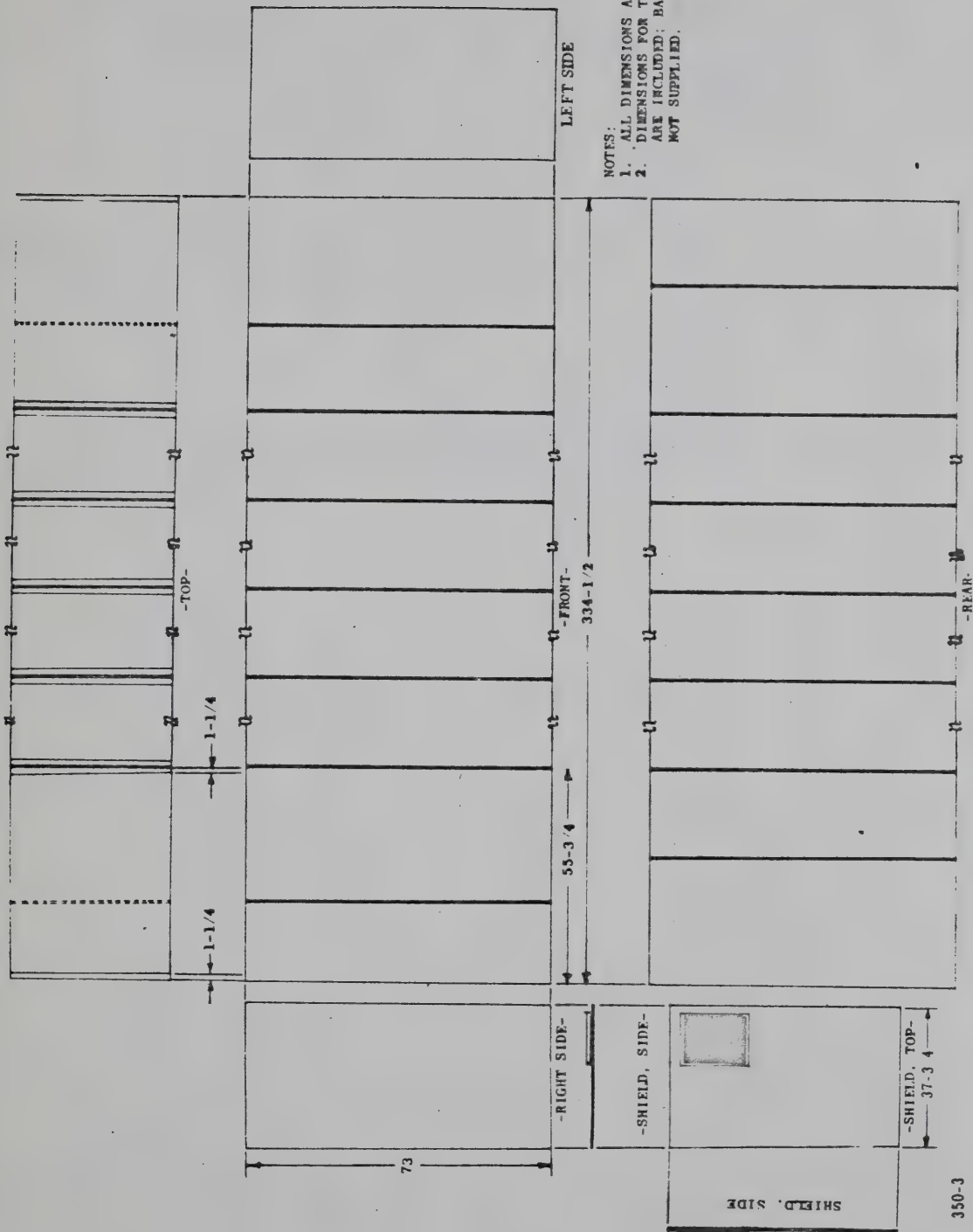
Physically, the largest single part of the equipment is an uncrated frame assembly, measuring three feet wide, three and a half feet deep, and six and a half feet high (approximately). These dimensions necessitate entrance door(s) sizes, leading to the intended installation point, that will allow adequate frame passage.

After selecting the equipment location, and before starting installation, it may be practical to outline overall dimensions on the floor with a piece of soft chalk or a plumbline. After using this outline as a guide to position the base assembly, these lines could be removed.

Another consideration is positioning in relationship to front, rear, and side walls. A minimum five-foot clearance, measured from the front and rear of the equipment to the corresponding wall, should be provided. A minimum three-foot clearance from both sides of the entire equipment to the walls should be provided. These dimensions permit operating and maintenance personnel room to work and habitability in the case of co-located equipments.

After planning final equipment location, the air intake and exhaust port dimensions, see figure 2-1, can be used as a reference in and for fabricating the desired air duct system. If the equipment air ducts are not connected to a central duct system, location and sizes of exterior wall cut-outs must be considered.

The signal input and remote control cables and output transmission lines



- NOTES:
1. ALL DIMENSIONS ARE INCHES.
 2. DIMENSIONS FOR THE BASE ASSEMBLY ARE INCLUDED; BASE ASSEMBLY IS NOT SUPPLIED.

Figure 2-1. Equipment Overall Dimensions,
Installation Diagram (Sheet 1 of 2)

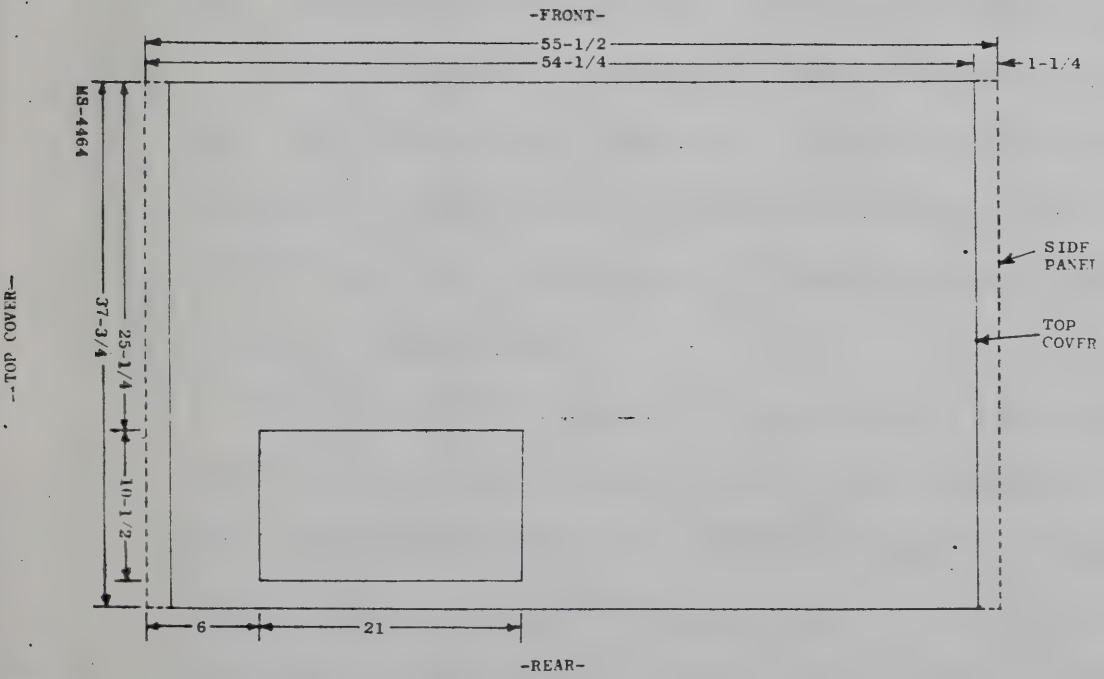
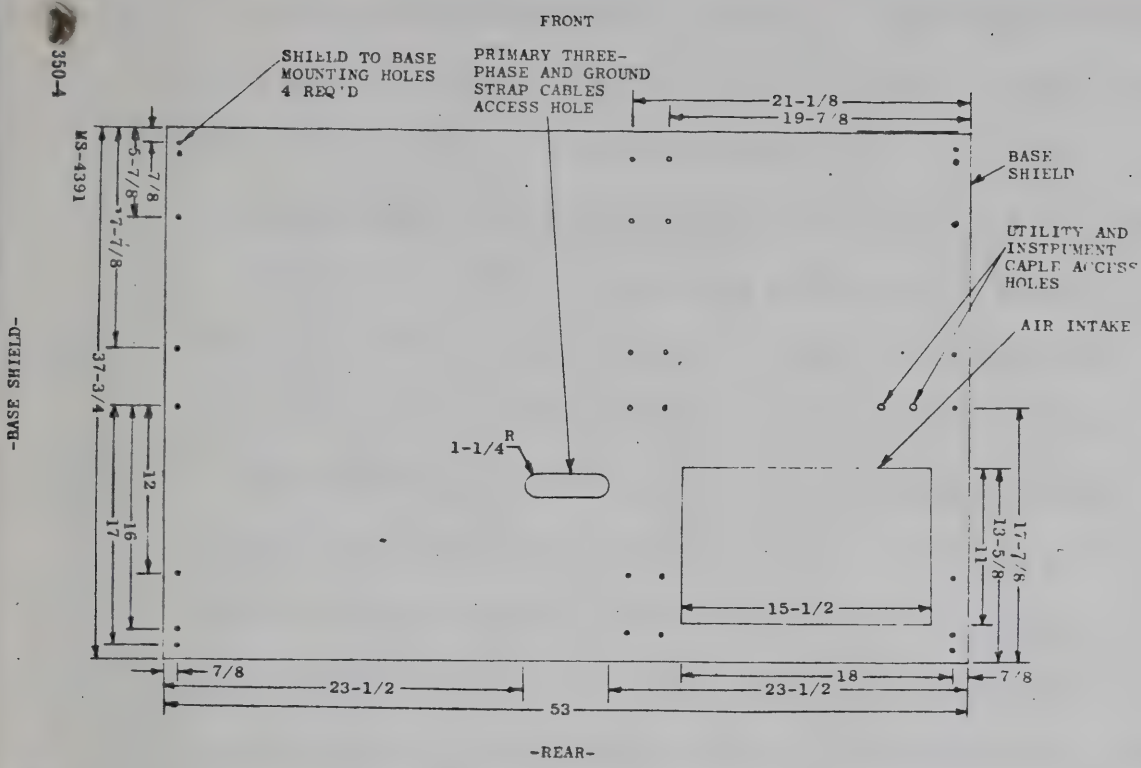


Figure 2-1. Equipment Overall Dimensions
Installation Diagram (Sheet 2 of 2)

are clearance considerations. Construction of necessary hole sizes in the exterior walls between the equipment and input, remote control, and terminating devices will have to be considered.

2-5. LOCATION OF PERIPHERAL EQUIPMENT AND CABLING.

There is no distance limitation governing the location of peripheral equipment (i. e. facsimile and teletype machines, microphones, keys, etc.) other than providing compatible interequipment operation (refer to table 1-2).

Consideration should be given to the routing and length of input signal cables before assembling the transmitter. Signal input cable entry is through the base assemblies of the transmitter during installation; irrespective of exterior cabling methods. All signal inputs are pin jack connections terminating inside the rear of the auxiliary frame. This point can be used as a reference in determining exact input signal cable lengths.

2-6. A-C INPUT CABLING AND POWER REQUIREMENTS.

Three separate a-c inputs are required for each transmitter (refer to table 1-4). The primary, instrument, and utility input cables are routed through access holes in the base assembly and base shield to their respective terminations in each transmitter (See figure 2-2). Specific requirements are outlined in the following subparagraphs.

The primary three-phase a-c input to each transmitter terminates as a "wye" connection at transformer T802, in the main frame lower rear compartment. For reference purposes, the cable (phase 1, phase 2, phase 3, and 3 neutral wires) should measure approximately 36 inches from the transformer terminals, through the base shield and base assembly, to the floor level immediately below; the cable length from this point to the breaker box can be de-

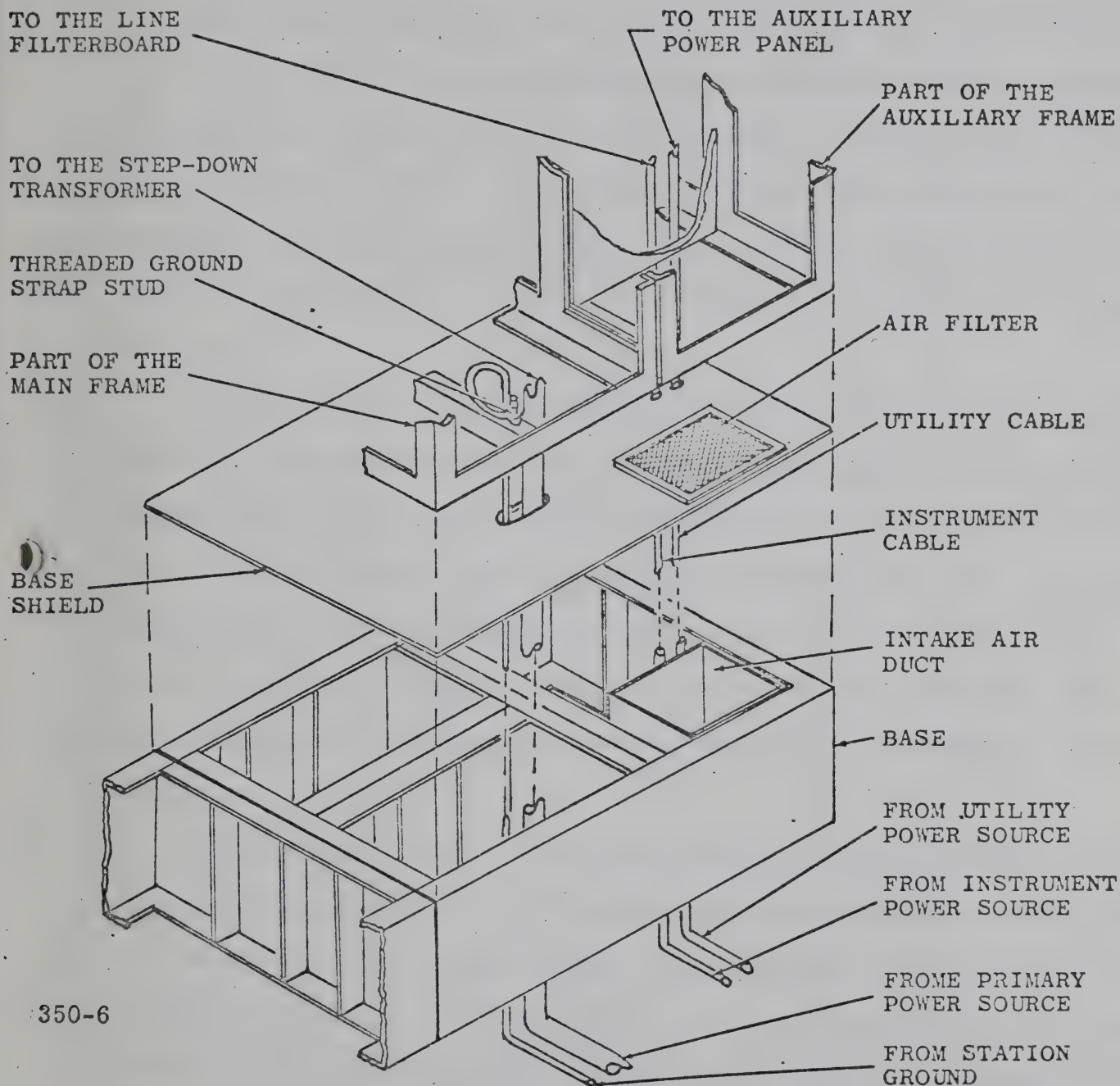


Figure 2-2. Typical Input Power Cabling, Installation Diagram

terminated by measuring its routing distance. In fulfilling adequate a-c input cabling requirements, consider each transmitter to draw approximately 22,500 watts at 440 volts, 60 cycles, three phase, 50 amperes per phase (see table 1-2). Actually the current draw is about 30 amperes per phase, but 50 is a practical and safe value. These requirements can be used in providing the appropriate size wires in the primary cable, switch or breaker boxes, and etc. for each transmitter. For personnel safety, it is suggested the switch box(es) be equipped with a key-locking device that can be locked in the off position during maintenance.

The instrument input to each transmitter requires an externally-regulated 120-volt $\pm 5\%$, single-phase, 60-cycle $\pm 5\%$, 60-ampere source. The cable terminates at line filterboard A-3479, in the lower rear part of the auxiliary frame. For reference purposes, the cable (two-wire) should measure approximately 36 inches from the line filterboard, through the auxiliary frame center shield, base shield, and base assembly, to the floor level immediately below; the cable length from this point to the breaker box can be determined by measuring its routing distance.

The utility input to each transmitter requires a 115-volt, 60-cycle, single phase, 30-ampere source. The cable terminates at the auxiliary power panel, in the lower front of the auxiliary frame. For reference purposes, the cable (two-wire) should measure approximately 48 inches from the auxiliary power panel, through the base shield and base assembly, to the floor level immediately below; the cable length from this point to the breaker box can be determined by measuring its routing distance.

2-7. EQUIPMENT GROUND CONNECTION.

Each transmitter must be grounded to station ground. Accordingly, a threaded stud has been welded to the inside of the main frame of each transmitter. The exact location of the threaded stud is 16" by 5" from the left rear corner of the main frame. If a station ground has not been established, locate the appropriate station ground cabling in these areas before starting the installation procedure. Complementary hardware for connecting the station ground cable to the transmitter is provided, and will be connected during the procedure.

2-8. ANCHORING.

Anchoring the transmitter to the floor in a land installation should not be necessary to maintain stability, since gross weight for each transmitter is approximately 2,800 pounds. However, in a shipboard installation, the equipment should be anchored; this could be done during installation by drilling holes in the base assembly and securing it with hardware.

2-9. OUTPUT IMPEDANCE, CONNECTION, AND TRANSMISSION LINE.

The output impedance or load for each transmitter is nominally 50 ohms. The output device is a standard 1-5/8 inch EIA (Electronics Industry Association) flange connector that is located on the top of the main frame. Any compatible connector may be used on the end of an appropriately power-rated 50 ohm coaxial transmission line. After determining length (transmitter to terminating device), the transmission lines must be fabricated; the connectors and coax lines are not supplied.

2-10. PERSONNEL REQUIREMENTS.

Installation personnel must be able to handle all of the installation tools listed in table 1-4. Also, they should be capable of identifying various electronic

components associated with a high-power transmitter. Approximately six to eight people will be required; more people does not mean the job will be done faster.

2-11. APPROXIMATE ASSEMBLY TIME.

Qualified personnel, totally unfamiliar with the transmitter, working with minimum supervision under a qualified electro-mechanical supervisor, should be able to assemble each transmitter in two days. This time is based on the assumption that the procedure is followed.

SECTION 3

LOGISTICS

3-1. INTRODUCTION.

This section presents information for logistic personnel. Information covered includes material handling, packaging data, inspection and damage, and uncrating methods.

3-2. MATERIAL HANDLING.

Whether an equipment is crated or uncrated various precautions must be observed in material handling to prevent personnel injury and/or damage to the equipment.

Weight alone is not an indication that equipment can be moved safely by personnel. Size is also an important consideration. A light-weight, large and bulky item cannot easily be handled by one man. When personnel are involved in handling, a good rule-of-thumb is: 50 pounds for one man, or 100 pounds for two men. Weight in excess of 100 pounds should be handled by a moving or lifting device. Before handling material, refer to tables 1-1 and 3-1 for crated and uncrated weights and dimensions.

3-3. PACKAGING DATA.

Each transmitter is packed in 9 crates (not including spares). Each crate is assigned a number from 1 to 54 and appears on the crate. Now that crate one has been opened and before starting the actual installation procedure, physically locate crate one closest to the intended point of installation, locate the other crates in numerical sequence such that crate 54 ends up placed farthest away from crate one. Arranging crates in this manner facilitates unpackaging and

assembling the transmitter.

Each transmitter is cleaned, preserved, and packaged, in accordance with MIL-P-116 and PMD-40. Figure 3-1 illustrates typical equipment packing methods.

Table 3-1 lists the crated weights and dimensions. Additional reference can be obtained from table 1-1.

TABLE 3-1. CRATED WEIGHTS AND DIMENSIONS^a

| CRATE NO. | GROSS WEIGHT IN LBS | DIMENSIONS IN INCHES | | | CU. FT. |
|------------|---------------------------------------|----------------------|--------|--------|---------|
| | | LGT | W | D | |
| 1 | 181 | 32 | 23-7/8 | 30 | 13.4 |
| 2 | 414 | 76-3/4 | 23-3/4 | 44-1/4 | 46.8 |
| 3 | 738 | 82-1/8 | 32-1/4 | 50-1/4 | 77 |
| 4 | 1378 | 81-3/8 | 42 | 51-1/2 | 101.9 |
| 5 | 536 | 28-3/4 | 19-3/4 | 24 | 7.9 |
| 6 | 267 | 32 | 23-7/8 | 30-3/4 | 13.4 |
| 7 | 266 | 35 | 26-3/4 | 38-3/4 | 20.6 |
| 8 | 233 | 40 | 30-3/4 | 22 | 15.7 |
| 9 | 273 | 40 | 30-3/4 | 22 | 15.7 |
| 10 thru 18 | Same as crates 1 thru 9, respectively | | | | |
| 19 thru 27 | Same as crates 1 thru 9, respectively | | | | |
| 28 thru 36 | Same as crates 1 thru 9, respectively | | | | |

^a approximate

- LEGEND
- 1 MAIN FRAME GPT-40K
 - 2 DESICCANT
 - 3 WRAPPING PAPERBOARD
 - 4 PRESSURE SENSITIVE TAPE
 - 5 FACE PANEL
 - 6 BARRIER BAG
 - 7 END CAP CUSHION
 - 8 END CAP CUSHION
 - 9 WOODEN BOX
 - 10 STEEL STRAPPING

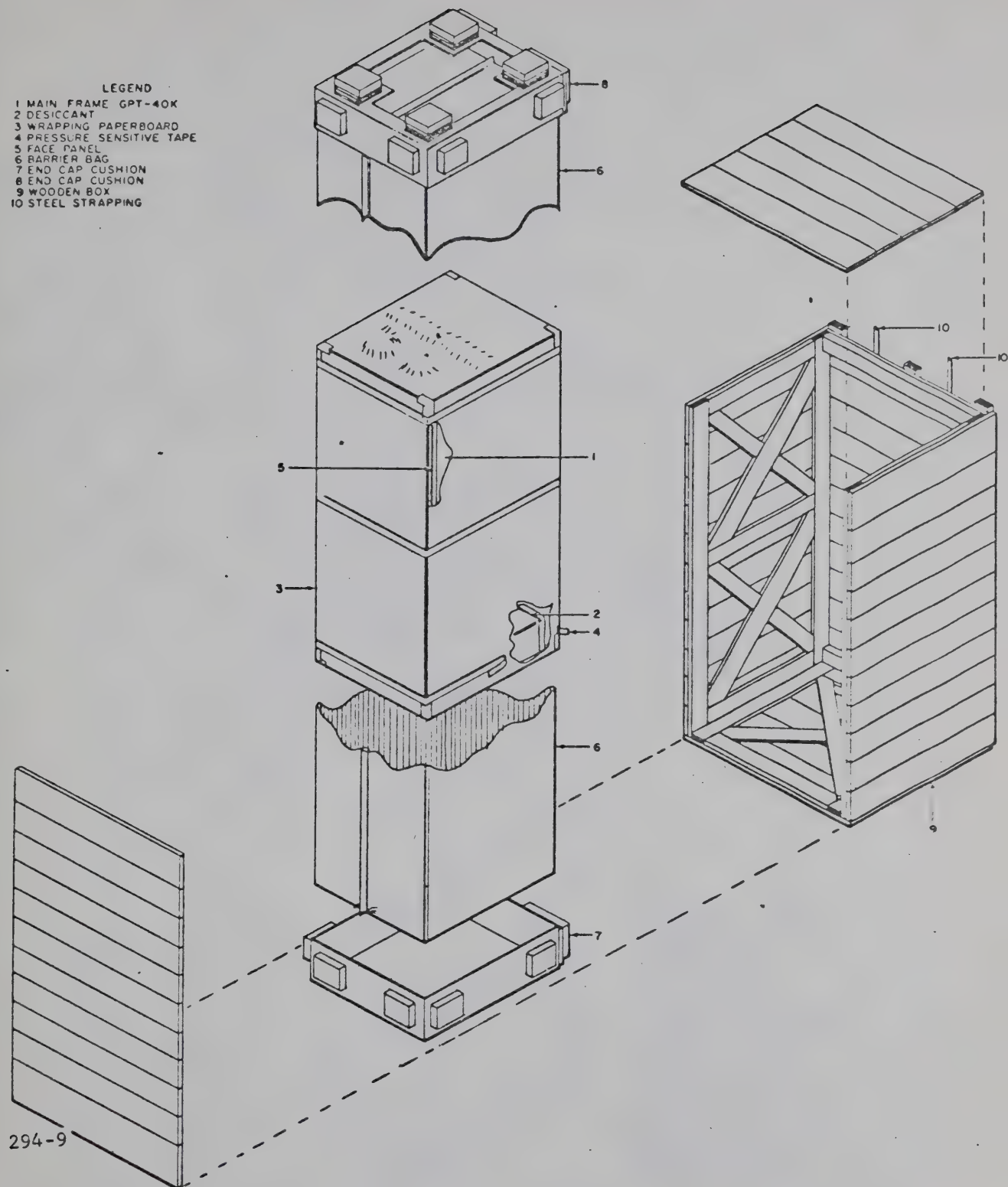


Figure 3-1. Typical Equipment Packaging (sheet 1 of 3).

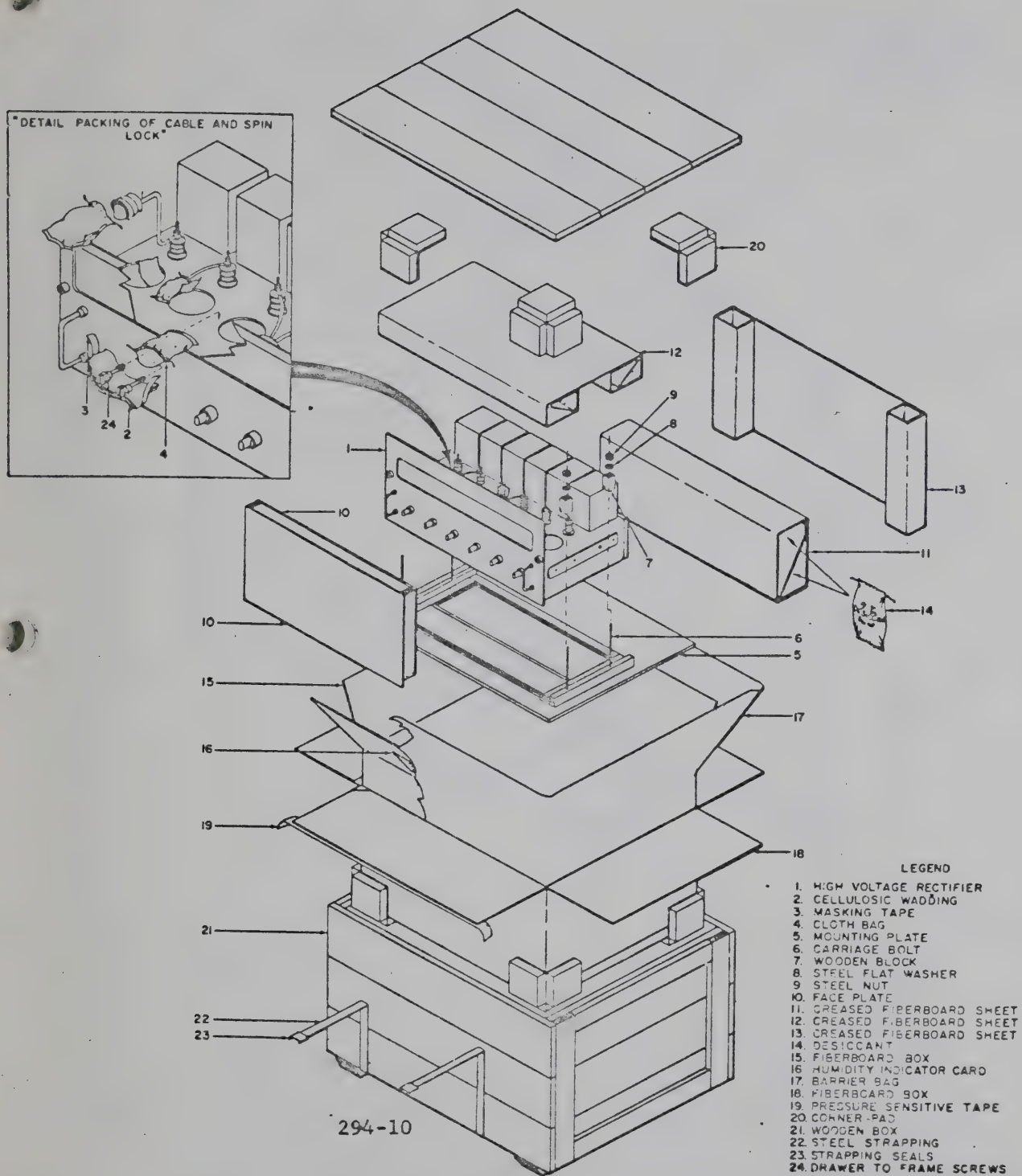
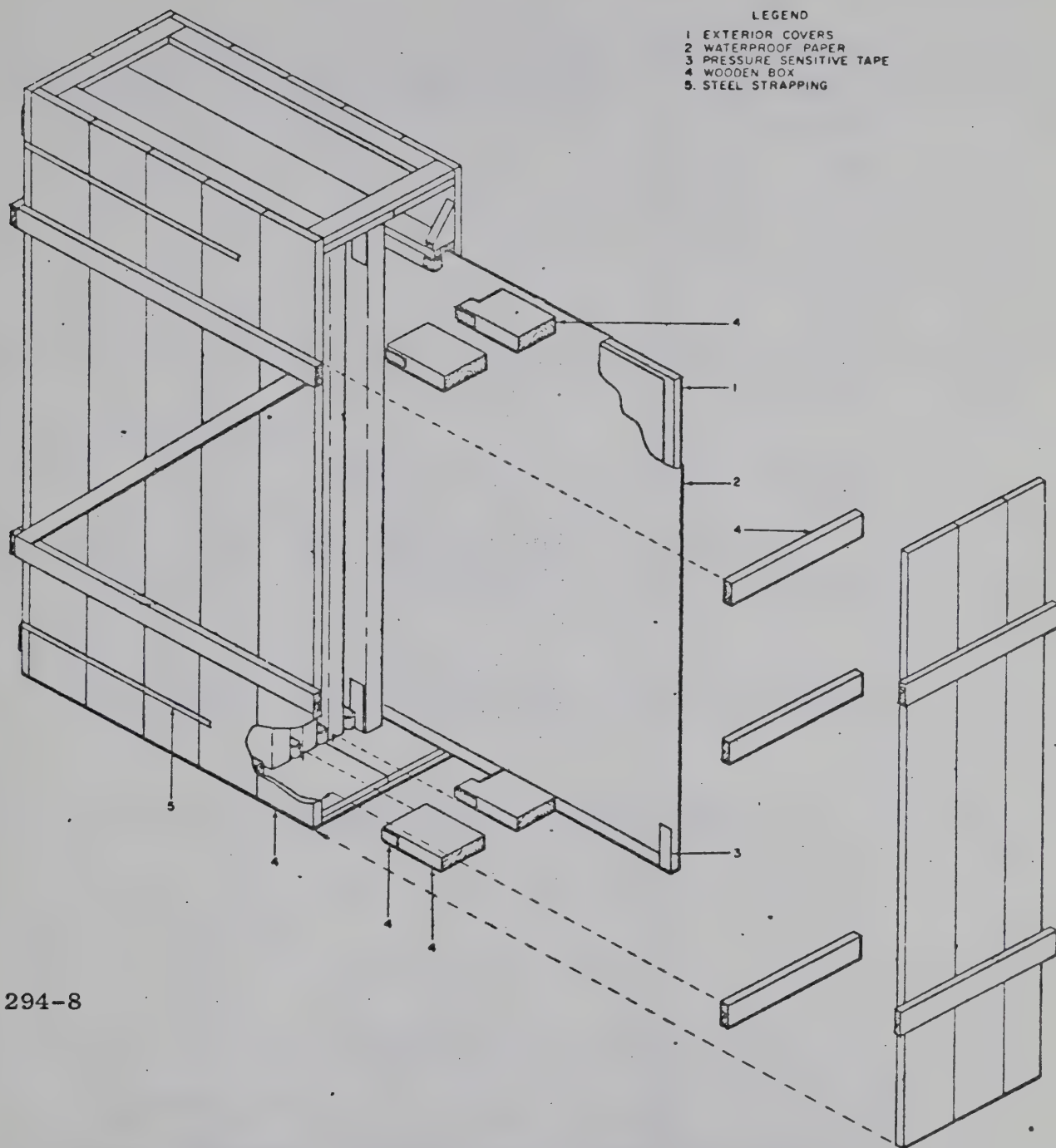


Figure 3-1. Typical Equipment Packaging (sheet 2 of 3).



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Figure 3-1. Typical Equipment Packaging (sheet 3 of 3)

TABLE 3-1. CRATED WEIGHTS AND DIMENSIONS (CONT)

| CRATE NO. | GROSS WEIGHT IN LBS | DIMENSIONS IN INCHES | | | CU. FT. |
|------------------|-----------------------------------------------|----------------------|---|---|---------|
| | | LGT | W | D | |
| 37 thru 45 | Same as crates 1 thru 9, re- spectively | | | | |
| 46 thru 54 | Same as crates 1 thru 9, re- spectively | | | | |

3-4. INSPECTION AND DAMAGE.

Each transmitter has been assembled, calibrated, and tested before shipment. Immediately after reading this paragraph, inspect the outside of all crates for possible transit damage. While following the procedural installation instructions, carefully unpack each crate as indicated. Inspect all packing material for parts which may have been shipped as loose items or come loose during transit.

With respect to equipment damage for which the carrier is liable, The Technical Materiel Corporation will assist in describing methods of repair and the furnishing of replacement parts.

3-5. UNCRATING METHODS.

The following information briefly outlines general uncrating methods to be employed during installation. They must be adhered to when unpacking the equipment to prevent damage. Keeping in mind previously discussed information on material handling, packing data, and inspection and damage, proceed as follows:

- a. Remove wire straps or bands from around the crate indicated with a pair of snips.

b. Unless otherwise specified, remove nails from top of the crate with a nail puller. Do not use a claw hammer, pinch bar, or etc. Then remove nails from sides of crate as required.

c. When the sides have been removed, rip off the moisture-proof paper. If a knife is used, care should be exercised not to mar equipment.

d. If equipment is not packed in a cardboard carton, remove it from the crate.

e. If after removing the top of the crate a cardboard carton is encountered remove the carton from the crate and carefully open with a case cutter or remove tape.

f. Where applicable, remove the following:

- (1) Blocking pieces
- (2) Barrier Bags
- (3) Tape
- (4) Molded cushioning
- (5) Cellulose wadding
- (6) Tissue paper

g. If anything is damaged refer to paragraph 3-2.

NOTE

Anticipating the possibility of re-packing the transmitter for relocation, it is suggested that all packing crates and materials be saved. Total storage area required, can be calculated using dimensions in table 3-1.

Should re-packing the transmitter be necessary, several methods may be employed: 1. Use the original shipping crates and materials; or, 2. Fabricate

new shipping containers. In the first case, three requirements are necessary:

1. Avoiding needless damage to crates and materials during uncrating; 2. Making notes on equipment packaging during uncrating, essentially reversing the uncrating and installation procedure: 3. Dry storage of crates and materials until re-use. In the second case, detailed crating plans and materials, capable of withstanding shock, vibration, and moisture, are required. In either case, a decision must be made prior to uncrating the transmitter.

SECTION 4

INSTALLATION PROCEDURE

4-1. INTRODUCTION.

A minimum number of assemblies, subassemblies, components, and hardware have been disassembled from each transmitter and separately packaged; thus reducing the possibility of equipment damage in transit. The method of disassembly and separate packing also makes equipment handling easier. This section presents logical step-by-step instructions for sequentially unpacking the shipping crates and assembling the equipment.

4-2. GENERAL INSTRUCTIONS.

Carefully read the instructions in each step. After reading, consider the complexity involved in doing the instruction(s). In some instances, it may be advisable to simulate a complex step before actually doing it. Make sure each step has been completed before proceeding to the next. Where instructions may not be readily obvious, illustrations are provided to complement the procedure.

Inter-equipment cables, wires, and other miscellaneous items, disconnected during equipment disassembly, are tagged and taped to attached equipment. To properly assemble the equipment, this tape must be removed as encountered. The information on a given tag indicates the designated terminal on a component that the tagged item must be connected. No confusion should arise with respect to which transmitter a given connection must be made since each transmitter will be electrically installed before the next. Make sure cables and wires have been connected before sealing up a frame with an r-f shield, front panel, drawer, or piece of exterior trim (a door, cover, etc.). If any confusion arises regarding necessary cable or wire connections, cabling diagrams are provided.

Temporary removal and replacement of panels, r-f shields, and component mounting assemblies are specifically called out in the procedure in order to install various items. To prevent unnecessary removal and replacement, follow the installation instructions; DO NOT anticipate instructions.

A complete list of equipment required to assemble the equipment is presented in table 1-4. These non-specialized tools are not supplied since items should be contained in an equipped maintenance shop. Make sure all personnel adhere to previously outlined techniques on material handling and uncrating.

4-3. PROCEDURE.

The following procedure is for installing the entire equipment. If any damage is encountered or a part is missing, refer to paragraph 3-2; DO NOT continue until the trouble is corrected or the missing part obtained.

STEP 1

- a. Position base assembly in accordance with pre-installation planning.

NOTE

Make sure the base assembly is correctly positioned with respect to the equipments intended front, and right and left sides. For reference purposes, looking at the equipments' front panels, transmitter number 1 is at the extreme left hand side.

- b. Route all a-c input cables into the base assembly; respectively orient each with respect to positions of each transmitter (see figure 2-1).

STEP 2

- a. Unpack assorted loose items from crate 1.
- b. Check each item contained against equipment supplied list.

STEP 3

CAUTION

To prevent covers, panels, and doors from being scratched, do not remove an item from a crate until the item is called for in the procedure.

- a. Open crate 2.
- b. Check each item contained against the equipment supplied list.

STEP 4

- a. Remove base shield and filter from crate 2.
- b. Properly position shield, figure 4-1, on base assembly; route all cables through their respective holes in the shield (see figure 2-1).

NOTE

Only part of this step can be performed now. The remaining part of the step (physically bending and routing ground, three-phase a-c input, utility, and instrument cables up through the shield to respective frame connections must be performed as transmitter assemblage progresses.

STEP 5

- a. Unpack crate 3.
- b. Position auxiliary frame on base assembly (see figure 4-2).

STEP 6

- a. Unpack crate 4.
- b. Position main frame on base assembly (see figure 4-2).
- c. Temporarily remove the indicator, control, and relay panel from the bottom front of the main frame. To remove panel:
 - (1) Unscrew large slotted hex-head screws on the front panel.

STEP 6 (CONT)

- (2) Pull panel forward to clear frame.
- d. Using hardware from crate 1 (bag-frame to base mounting kit), loosely bolt auxiliary and main frames to base assembly (see figure 4-2).
- e. Using hardware from crate 1 (bag-line filterboard mounting hardware kit), tightly bolt the line filterboard (contained in crate 1) to the shield (auxiliary and main frame shield) inside the bottom rear of the auxiliary frame, under the fan.

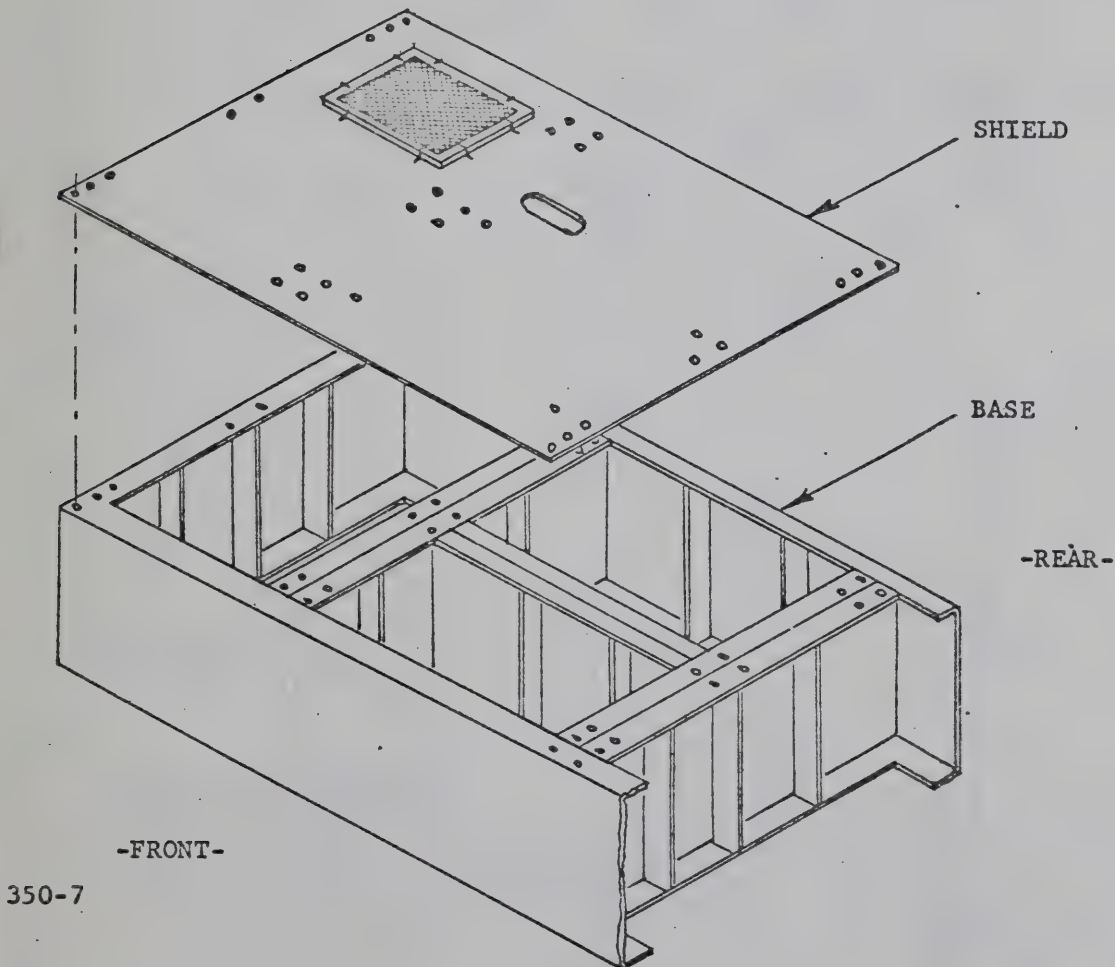


Figure 4-1. Base Shield, Installation Diagram.

STEP 6 (CONT)

- f. Using the remaining line filterboard hardware from crate 1, tightly bolt the line filterboard cover support brackets (contained in crate 1) to the frame shield, one bracket above and below the filterboard.
- g. Position and secure filterboard cover (contained in crate 1) to filterboard brackets.

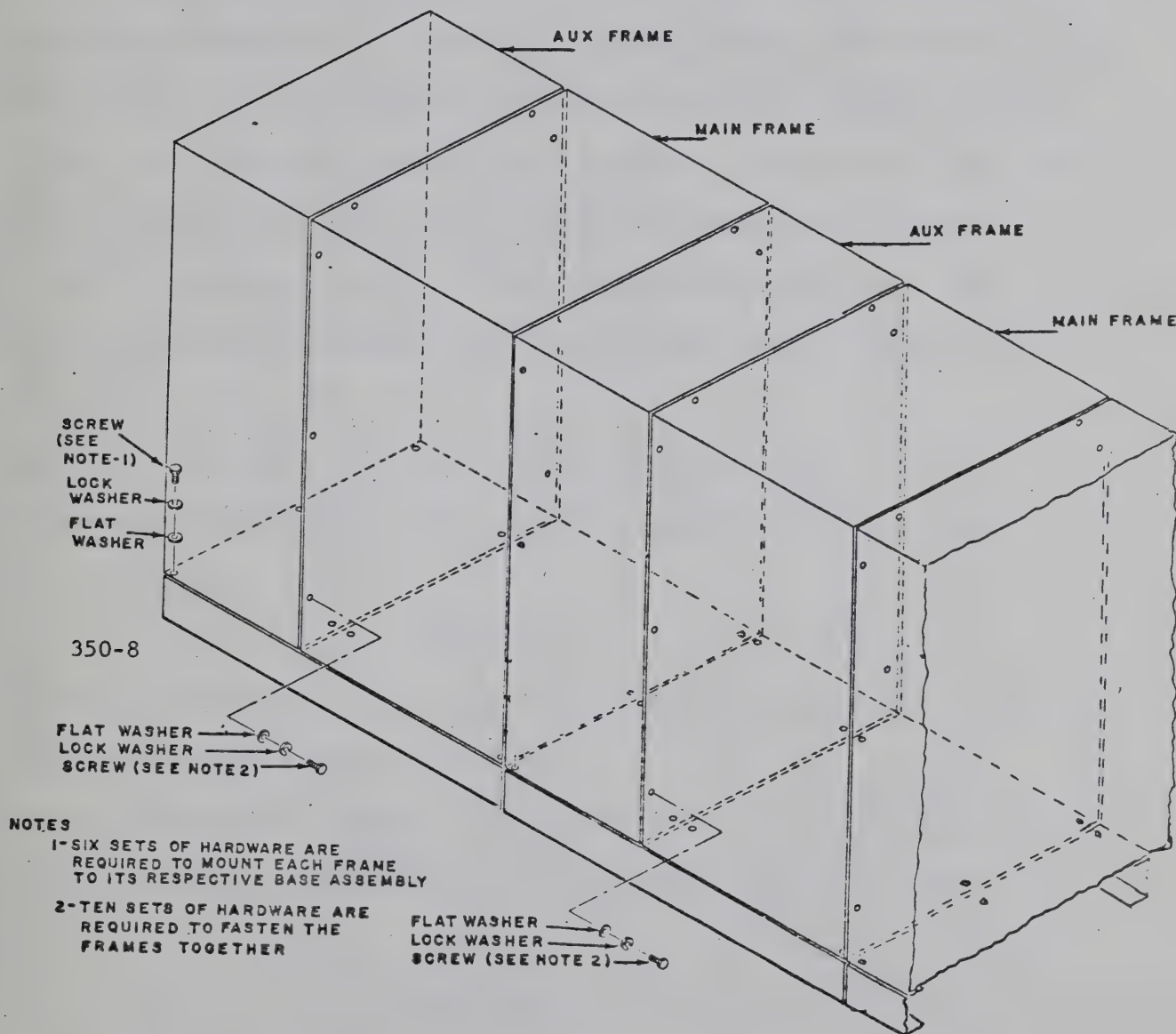


Figure 4-2. Auxiliary and Main Frames, Installation Diagram

STEP 6 (CONT)

- i. Route the utility and instrument a-c input cables, coming through the access hole in base shield to respective terminations; connect cables as indicated in diagram in section 6.

CAUTION

Before connecting the three-phase a-c input cable, mark corresponding ends of each wire with the proper phase.

- i. Route the three-phase a-c input cable, coming through access hole in base shield, to transformer T802 in bottom rear compartment of main frame, and connect wires as indicated in diagram in section 6. Make sure proper phasing exists when connecting wires; this is very important.
- j. Using the hardware from crate 1 (bag-grounding strap mounting kit), connect grounding strap to threaded stud in bottom rear of the frame, (see figure 4-3).
- k. Temporarily remove the shield from the upper rear of main frame.
- l. Temporarily unsecure and fold up the glass window panel from front of the main frame.

STEP 7

- a. Using hardware from crate 1 (bag-frame to frame mounting kit), loosely bolt frames together (see figure 4-2).
- b. After all hardware is loosely bolted, so that frame assemblies mechanically align, tighten all frame to base and frame to frame hardware.

STEP 8

CAUTION

Make sure each resistor is placed at its designated position.

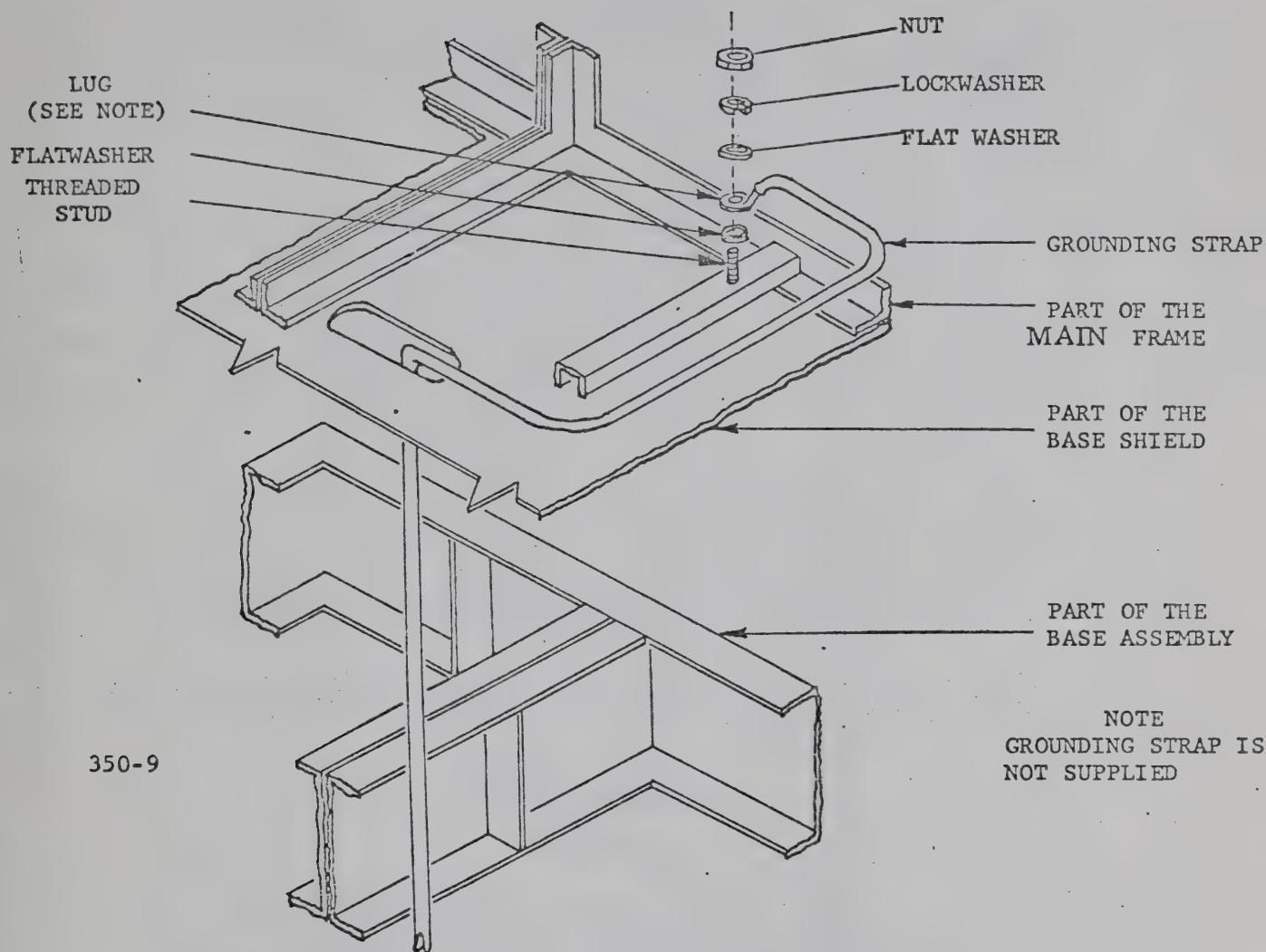


Figure 4-3. Grounding Strap, Installation Diagram.

STEP 8 (CONT)

Mount fixed resistors R802 through R815 (contained in crate 1) on resistor board, figure 4-4, in bottom rear section of main frame.

STEP 9

- a. Loosen hardware on retaining strap (figure 4-5).

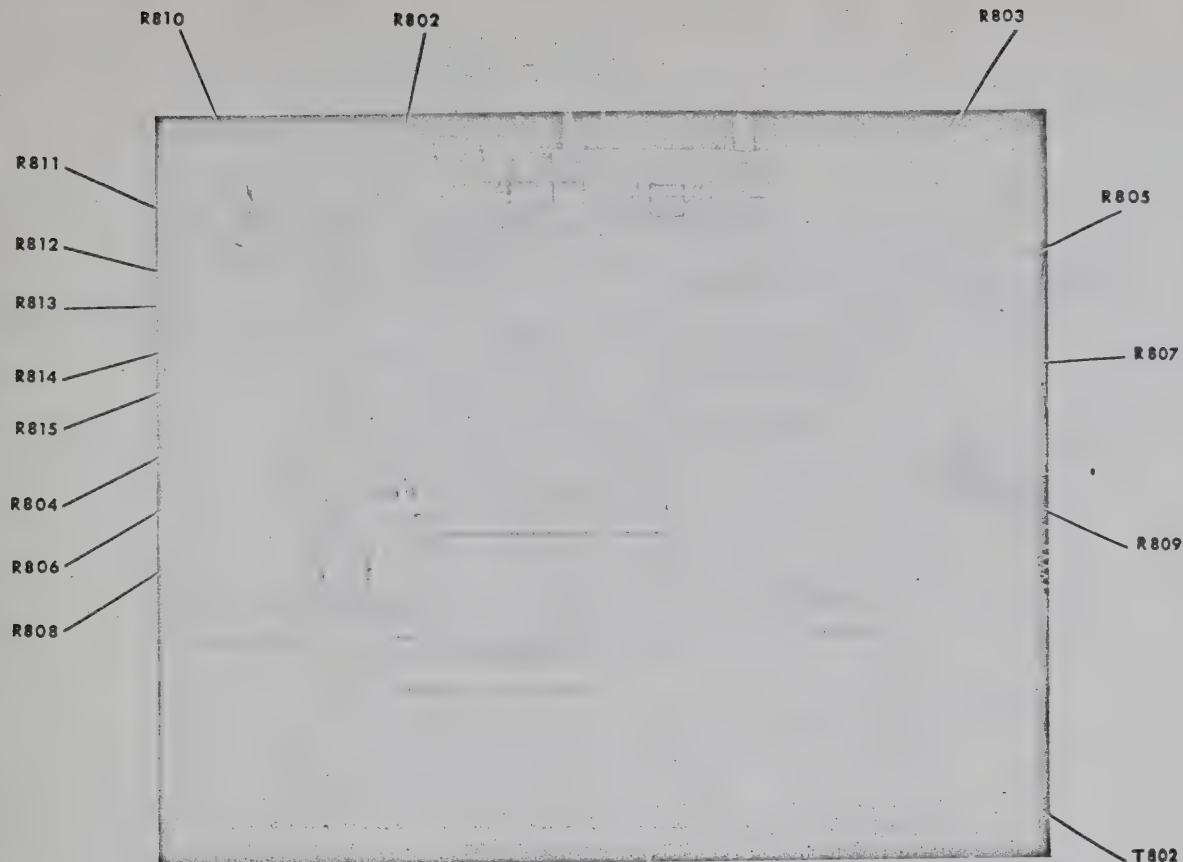


Figure 4-4. Lower Compartment of the Main Frame, Rear View

STEP 9 (CONT)

CAUTION

Pins located inside mounting socket for tube V900 must not be bent. Check pins carefully before attempting to install tube in socket.

- b. Observe pins inside the tube socket.
- c. Carefully lift tube V900 (contained in crate 1), handles first, up into air duct in top of frame until base of tube clears socket.
- d. Carefully lower tube straight down into socket until slight resistance is encountered. Make sure tube is centered in socket.

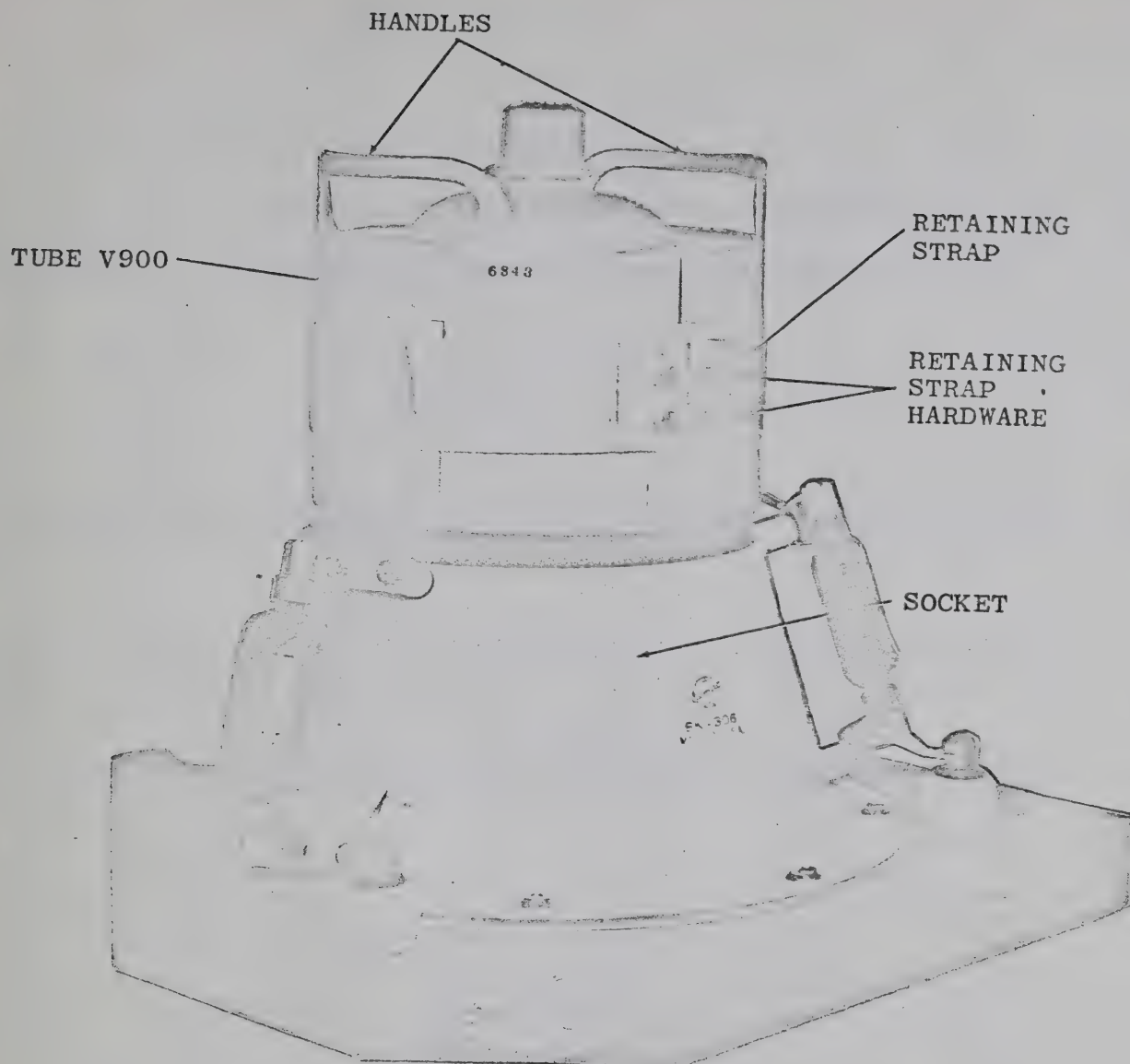


Figure 4-5. Upper Compartment of the Main Frame, Rear View

STEP 9 (CONT)

CAUTION

When seating tube V900, make sure tube socket pins are not damaged.

- e. In one motion while firmly grasping tube handles, rotate tube about a quarter of a turn and push tube firmly down into socket. A slight amount

STEP 9 (CONT)

of effort may be required to seat tube. Check tube seating; it must be all the way down and centered in tube socket.

- f. Tighten retaining strap hardware, so that tube is held securely in place.
- g. Replace rear r-f shield; fold-down and secure glass window panel on the main frame.

STEP 10

- a. Unpack crate 5.
- b. Position power transformer T800, Figure 4-6, into the bottom front of main frame.
- c. Using hardware from crate 1 (bag-main power transformer mounting kit), tightly bolt T800 to frame.
- d. Connect wires and cables to T800 as indicated in diagram in section 6.

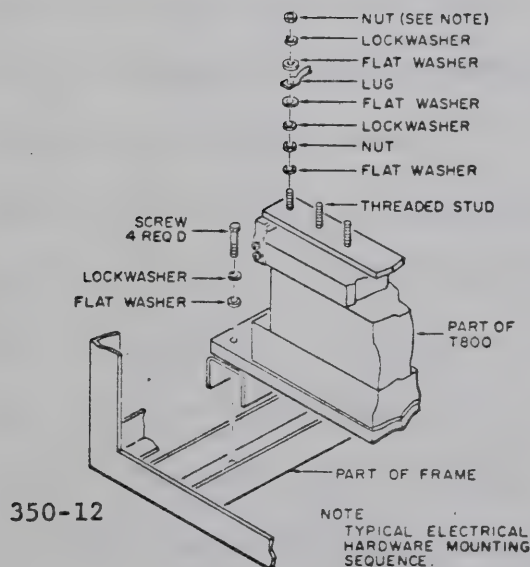


Figure 4-6. Transformer T800, Installation Diagram.

STEP 10 (CONT)

- e. Replace indicator, control, and relay panel; make sure two cables in frame are appropriately connected to jacks J700 and J701 on back of the panel.

STEP 11

- a. Temporarily remove safety cover from the filterboard inside the bottom front of the auxiliary frame.
- b. Connect wires from relays K3000 and K3001 to filterboard (as indicated in diagram in section 6).
- c. Replace safety cover on filterboard.

STEP 12

- a. Appropriately position cover top MS-4464 (contained in crate 2) on top of frames (see figure 4-7).
- b. Using hardware from crate 1 (bag-transmitter top mounting kit), tightly bolt cover top to respective frames.
- c. Insert appropriate size button plugs (contained in crate 1) into cover top to frame mounting holes.
- d. Route the signal input and remote control cabling through hole in cover top to terminal boards TB4004 and TB4005; connect cables to terminal boards as indicated in diagram in section 6.
- e. Using hardware from crate 1 (bag-trim strip mounting kit), push on the tinnerman type clip-nuts onto small "U-shaped" brackets welded to front of the auxiliary and main frames.

NOTE

Refer to figure 4-7

STEP 12 (CONT)

- Using remaining hardware from step 12, mount the following items (contained in crate 2) to respective frames as follows:
- (1) Auxiliary frame front top trim strip MS-4202.
 - (2) Main frame left front trim strip MS-1634.
 - (3) Main frame right front trim strip MS-1633.
 - (4) Auxiliary and main frame bottom front trim strip MS-1636.
- g. Using hardware from crate 1 (bag-exterior side panels to frame mounting kit), mount side panels MS-4462 and MS-4463 (contained in crate 2) on the side of the auxiliary and main frames.
- h. Insert appropriate size button plugs (contained in crate 1) into side panel to frame holes.
- i. Mount auxiliary frame hinged front right and left side trim strips MS-1637 and MS-1920 (contained in crate 2).
- j. Using hardware from crate 1 (bag-rear panels to frame mounting kit), mount rear panels MS-2748, MS-4465, MS-4466 (contained in crate 2) in their respective position, on the rear of the auxiliary and main frames.
- k. If this is the first transmitter, proceed to next step. If this is the second, third, fourth, fifth, or sixth transmitter, bolt adjacent transmitters together using hardware (bag-transmitter to transmitter mounting kit) contained in crate 1.

CAUTION

When removing the standing wave control unit from the frame, be careful; the drawer is not mounted on the drawer tracks. The front panel equipment to frame hardware is the only thing holding the drawer in the frame.

STEP 13

- a. Remove the standing wave control unit from the front of the auxiliary

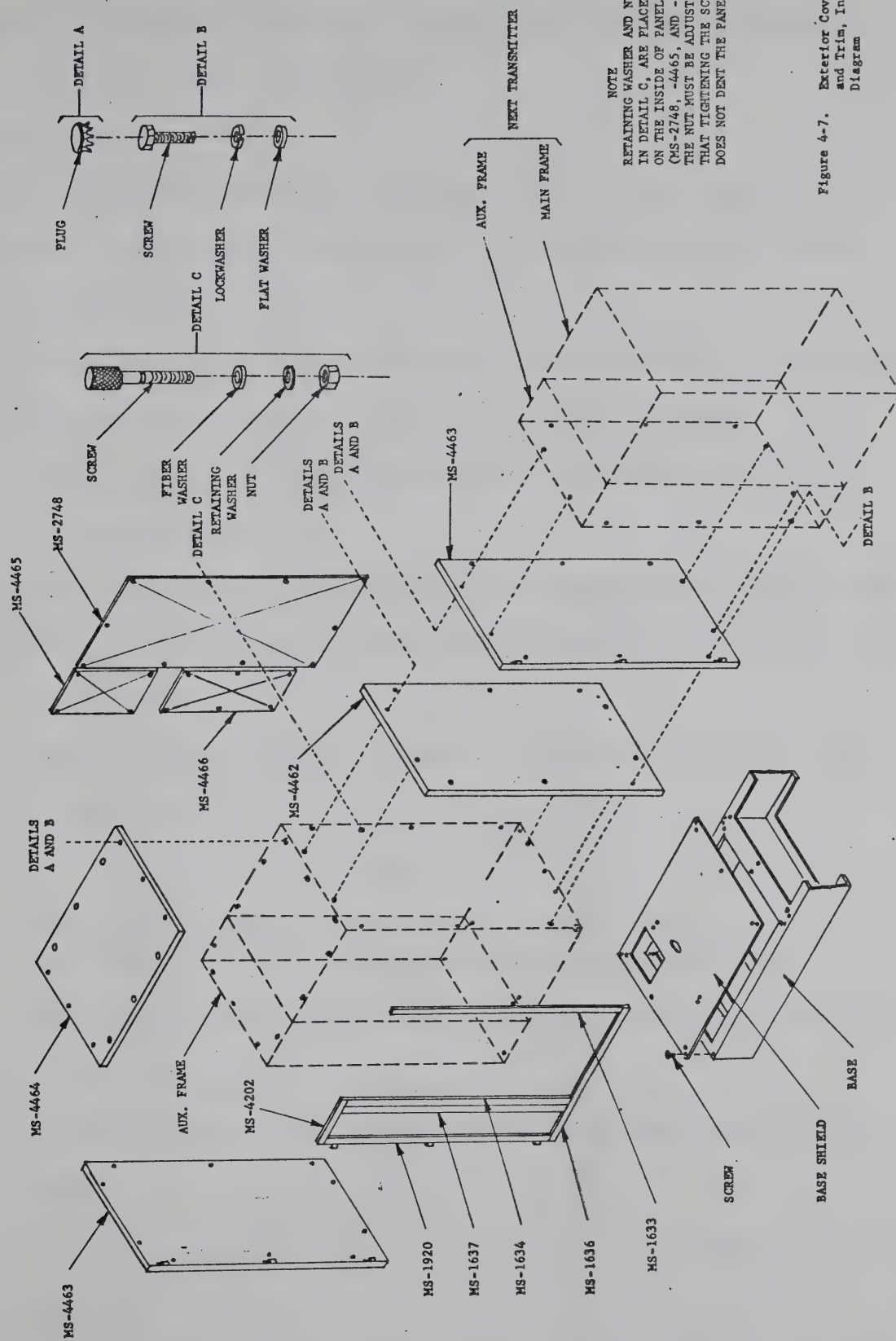


Figure 4-7. Exterior Covers, Panels and Trim, Installation Diagram

NOTE
RETAINING WASH
IN DETAIL C, A
ON THE INSIDE
(MS-2748, -446
THE NUT MUST B
THAT TIGHTENIN
DOES NOT DENT

STEP 13 (CONT)

frame and install it in the rear of the auxiliary frame as indicated in figure 4-8 and diagram in section 6.

- b. Unpack crates 6 and 7.
- c. Install each drawer assembly in its designated position, figure 4-8, in the auxiliary frame as it is unpacked. To install any drawer assembly, proceed as follows:
 - (1) Untape or unstrap cable assemblies, cable retractors, and all other components secured to the inside of frame for shipment.
 - (2) Pull center section of the frame drawer tracks out until they lock in an extended position.
 - (3) Position the drawer slides in the frame drawer tracks; ease drawer in until lock buttons (on drawer slides) engage in holes of the frame drawer tracks.
 - (4) Where applicable, pull tilt handles on sides of drawer and position drawer vertically.

CAUTION

When making cable or wire connections to a drawer, secure cables or wires with cable clamps, where applicable.

- (5) Connect all wires and cables to the drawer as indicated in diagram in section 6.
- (6) Pull tilt handles on sides of drawer and re-position drawer horizontally.
- (7) Press lock buttons on tracks and slide drawer completely into compartment.
- (8) Using hardware from crate 1 (bag-equipment to frame mounting kit), secure front panel of drawer to frame.

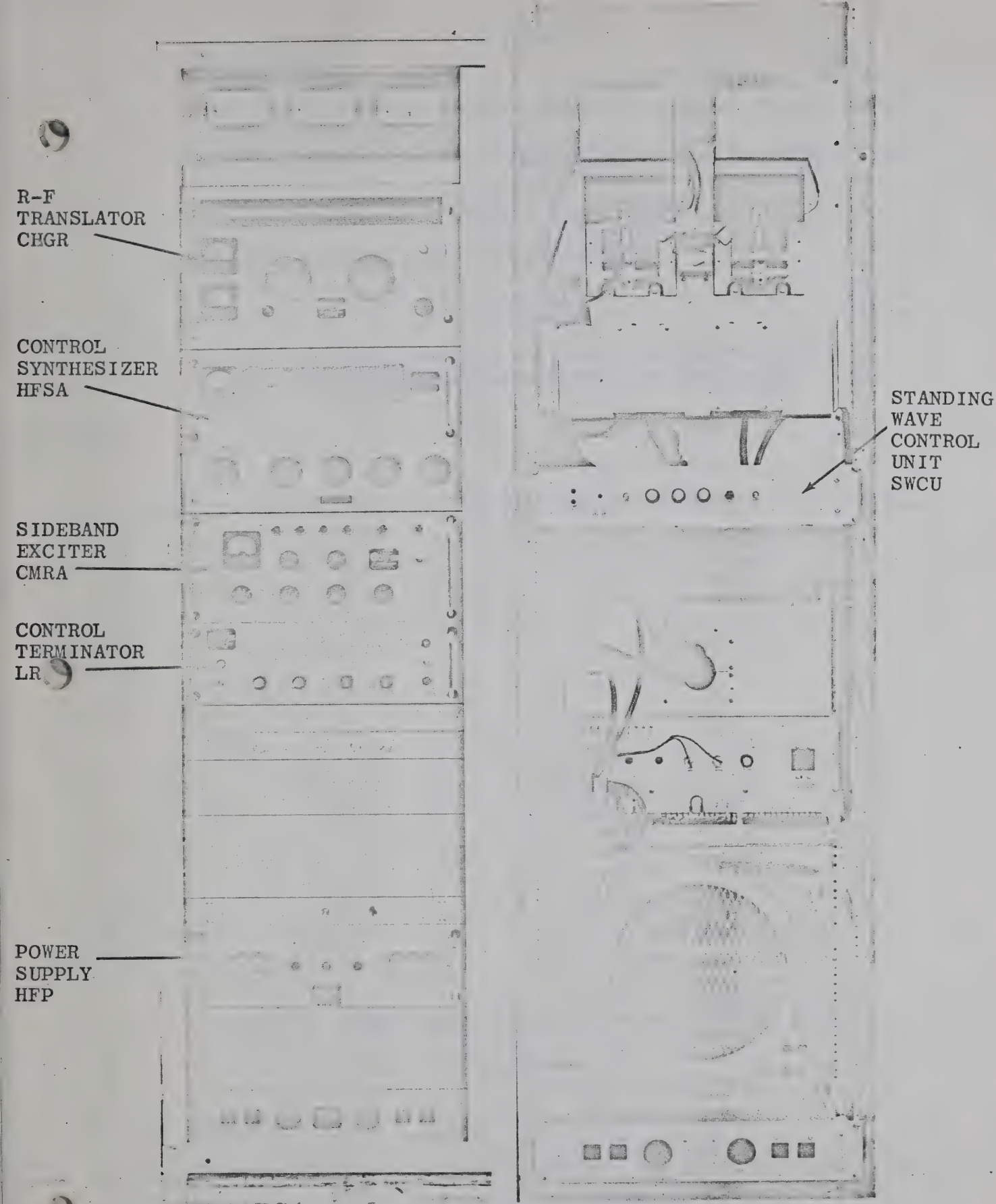


Figure 4-8. Front and Rear of the Auxiliary Frame, Installation Diagram.

STEP 14

- a. Unpack crate 8.
- b. Insert six high voltage rectifier tubes V600 through V605 (contained in crate 1), into tube sockets in high voltage drawer (see figure 4-9).
- c. Attach electrical plate connector caps to tubes.
- d. Install drawer into front of the main frame.

CAUTION

When securing drawer to the frame, do not over-tighten two large slotted hexhead screws in the front panel.

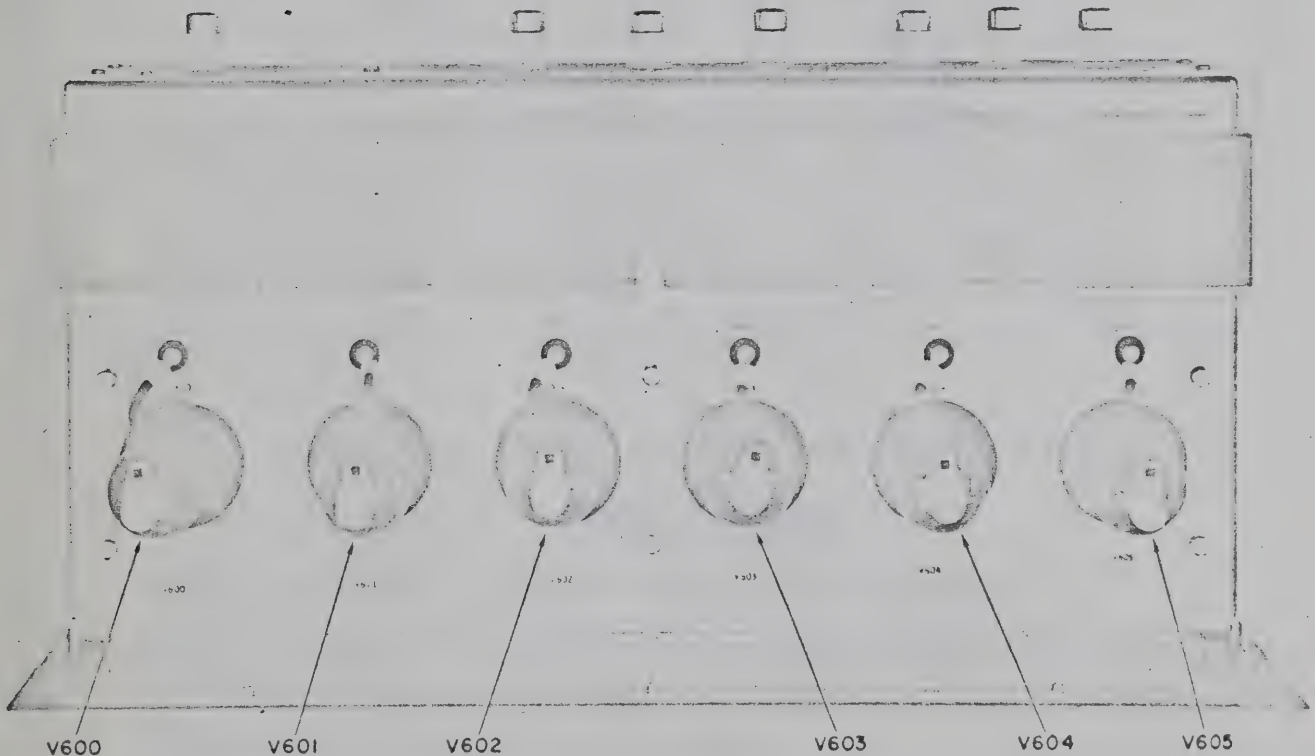


Figure 4-9. High Voltage Rectifier Drawer 600, Top View.

STEP 15

- a. Unpack crate 9.
- b. Temporarily remove screen cover from top of r-f amplifier drawer.
- c. Loosen screw on retaining clamp (see figure 4-10).

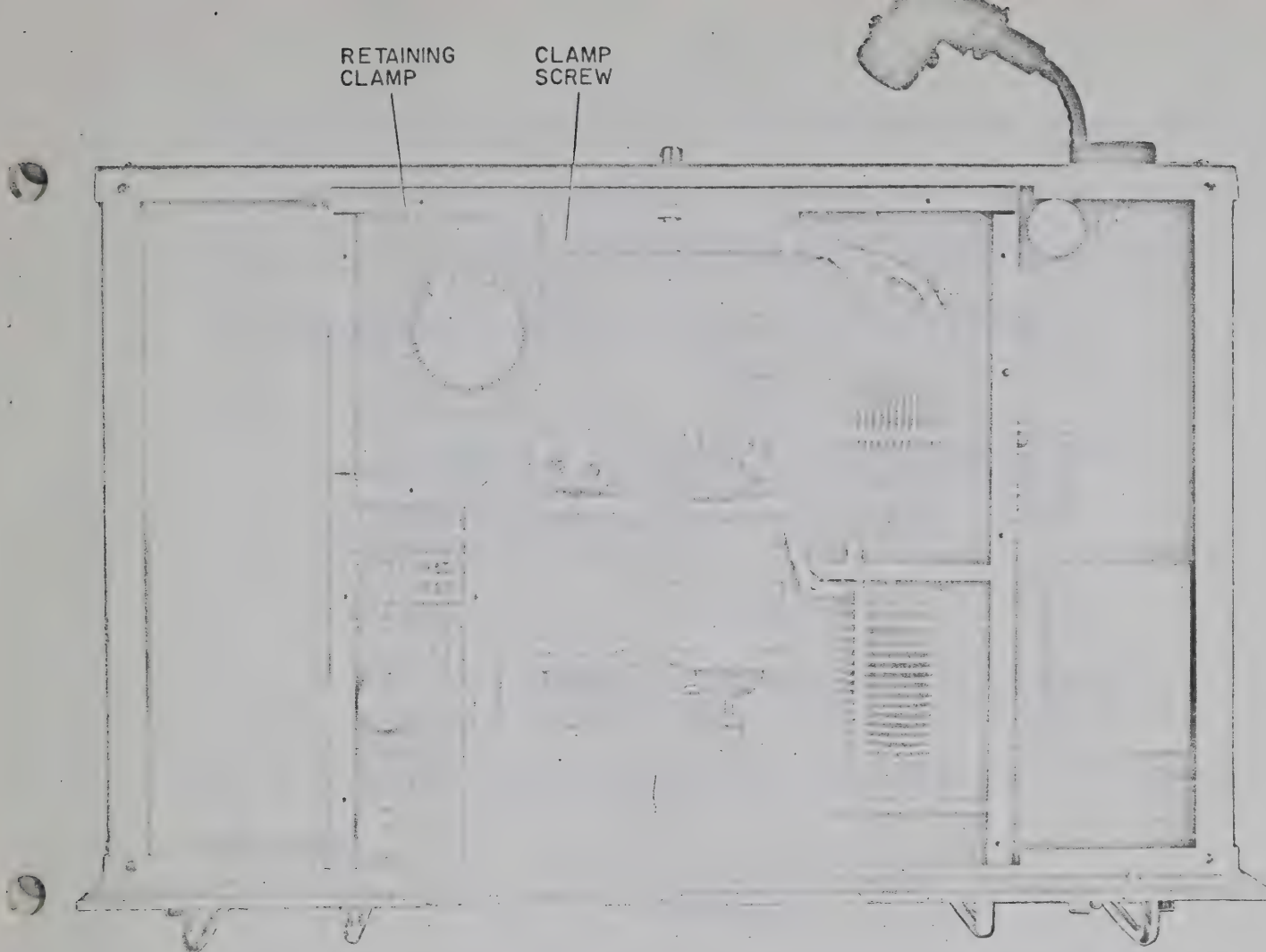


Figure 4-10. The R-f Amplifier Drawer, Top View

STEP 15 (CONT)

- d. Insert tube V203 (contained in crate 1) into tube socket.
- e. Tighten retaining clamp screw so that V203 is held securely in place.
- f. Replace screw cover on top of drawer.
- g. Install drawer in the empty front middle bay of the main frame; connect cables to the rear of drawer as indicated in diagram in section 6.

STEP 16

Connect the antenna transmission line to the transmitter (refer to diagram in section 6).

STEP 17

- a. Inspect the contents of all packing crates that have been opened. Make sure miscellaneous items (technical manuals, test data, tube warranties, extra hardware, emergency output cable, etc.) have been removed before dispensing with packing materials and shipping crates.

NOTE

A transmitter has just been completely assembled. It is suggested that all transmitters be installed before performing the pre-operational check as given in Section 5.

CAUTION

DO NOT connect the a-c input cables to the breaker boxes; power must not be applied to the transmitter.

- b. If this is the last transmitter, proceed to section 5; if it is not, proceed to step 18.

STEP 18

- a. Refer to table 1-3 or 2-1. Note that each transmitter is packed in nine crates. There are 54 crates (transmitter No. 1 is in crates 1 through 9; No. 2 is in crates 10 through 19; No. 3 is in crates 19 through 27; No. 4 is in crates 28 through 36; No. 5 is in crates 37 through 45; No. 6 is in crates 46 through 54.
- b. To install the remaining transmitters, repeat steps 1 through 17 substituting the appropriate crate numbers for those indicated in a step.

NOTE

Adjacent transmitters must be bolted together. Hardware (bag-transmitter-to-transmitter mounting kit) is contained in crate 1. After step 12, tightly bolt the transmitter previously assembled to the one being assembled.



SECTION 5

PRE-OPERATIONAL CHECKOUT PROCEDURE

5-1. INTRODUCTION.

This section presents a pre-operational checkout procedure that must be performed by a technician after installation and before operation. The procedure briefly checks for possible equipment damaging mistakes made during installation. Should a step disclose an abnormal indication, re-check installation wiring. Troubleshooting techniques and corrective measures are not in this procedure.

5-2. CHECKOUT PROCEDURE.

Using necessary test equipment and tools listed in table 1-4, proceed as follows:

- a. Place the main power panel MAIN POWER breaker on front of main frame at OFF.
- b. Open the rear doors on the transmitter and place the AUXILIARY FRAME MAIN POWER breaker, mounted on the center partition inside the rear of the auxiliary frame, at OFF.
- c. Measure infinite resistance between transmitter ground and each wire on the unconnected end of the a-c line input cable.

NOTE

Each wire of the a-c line input cable was marked in the installation procedure to indicate proper phase and facilitate connection later in this procedure.

- d. Place all front panel on/off and off/standby switches on drawers in the auxiliary frame at OFF.

- e. Place the AUXILIARY FRAME MAIN POWER breaker at ON.
- f. Repeat step c.
- g. Place the AUXILIARY FRAME MAIN POWER breaker at OFF.
- h. Open the two shorting contacts of the high-voltage shorting relay, figure 4-4, and place a sheet of paper between the contacts.
- i. Unfasten and fold-up the glass-window and meter panel on the front of the main frame.
- j. Measure 100,000 ohms between transmitter ground and terminal E936, mounted inside the power-amplifier compartment of the main frame, at the top.
- k. Fold-down and secure the glass-window and meter panel.
- l. Remove sheet of paper between dead-man relay contacts.

WARNING

Dangerous voltages are present.

CAUTION

Make sure the phase (1, 2, and 3) marked on each wire of the a-c line input cable is connected to the corresponding phase in the line box.

- m. Connect a-c line input cable to the a-c input line box.
- n. Remove the main blower air filter located inside the rear of the auxiliary frame, on the left wall. To remove filter, twist the retaining clamp and pull the filter slightly up and out of the frame.

NOTE

Observe the position of the air filter before removing; it will be replaced later.

- o. Place the main power panel MAIN POWER breaker ON and after about

one minute turn it OFF. Go to the rear of the auxiliary frame and observe cw (clockwise) rotation of the main blower blades as they slow down.

p. Replace and secure the main blower air filter.

q. Place the AUXILIARY FRAME MAIN POWER breaker at ON.

r. Observe through the glass-window panel on front of the main frame that the fan in the upper left corner rotates.

s. Place the AUXILIARY FRAME MAIN POWER breaker at OFF.

t. Close and lock the rear doors.

u. Place the MAIN POWER breaker, on the main power panel, at ON; allow a 30-minute warm-up before proceeding to the next step.

v. Place the HIGH VOLTAGE breaker, on the main power panel, at ON; PLATE ON lamp on front panel of 10-kw PA section lights (glows dimly for about five seconds, thereafter glows brightly); six high voltage rectifier tubes, apparent through glass-window on the 10-kw high voltage rectifier drawer, glow blue.

w. Place the HIGH VOLTAGE breaker at OFF; wait five minutes before proceeding to the next step.

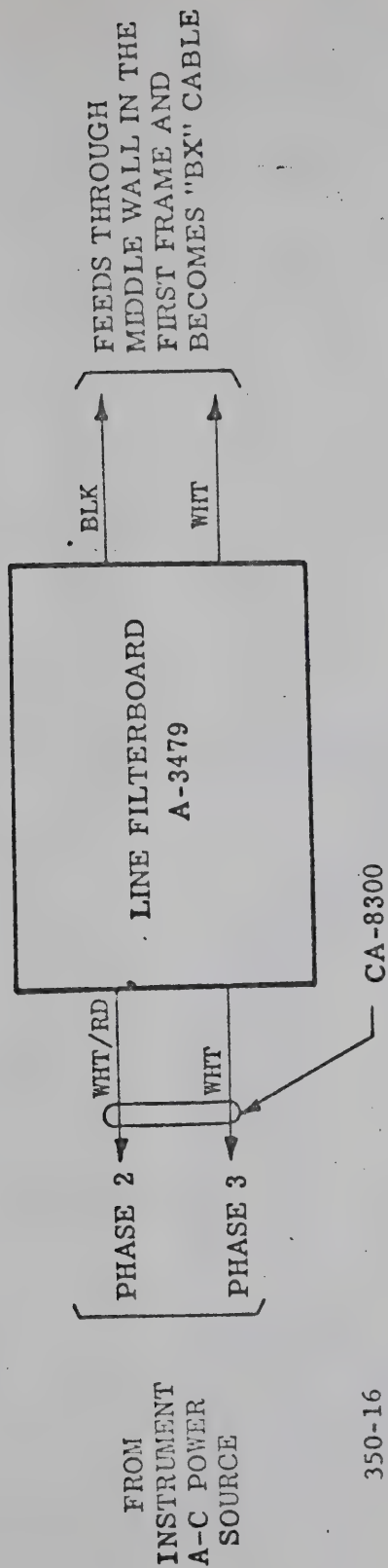
x. Place the MAIN POWER breaker at OFF. This completes the procedure. The operator may now attempt to operate the transmitter.

SECTION 6

CIRCUIT DIAGRAMS

6-1. INTRODUCTION.

This section presents all of the circuit diagrams necessary for transmitter installation. Circuit diagrams not directly related to installation may be found in the applicable operations and maintenance manual (refer to table 1-5).



350-16

Figure 6-1. Line Filterboard A-3479, Cable Connection Diagram

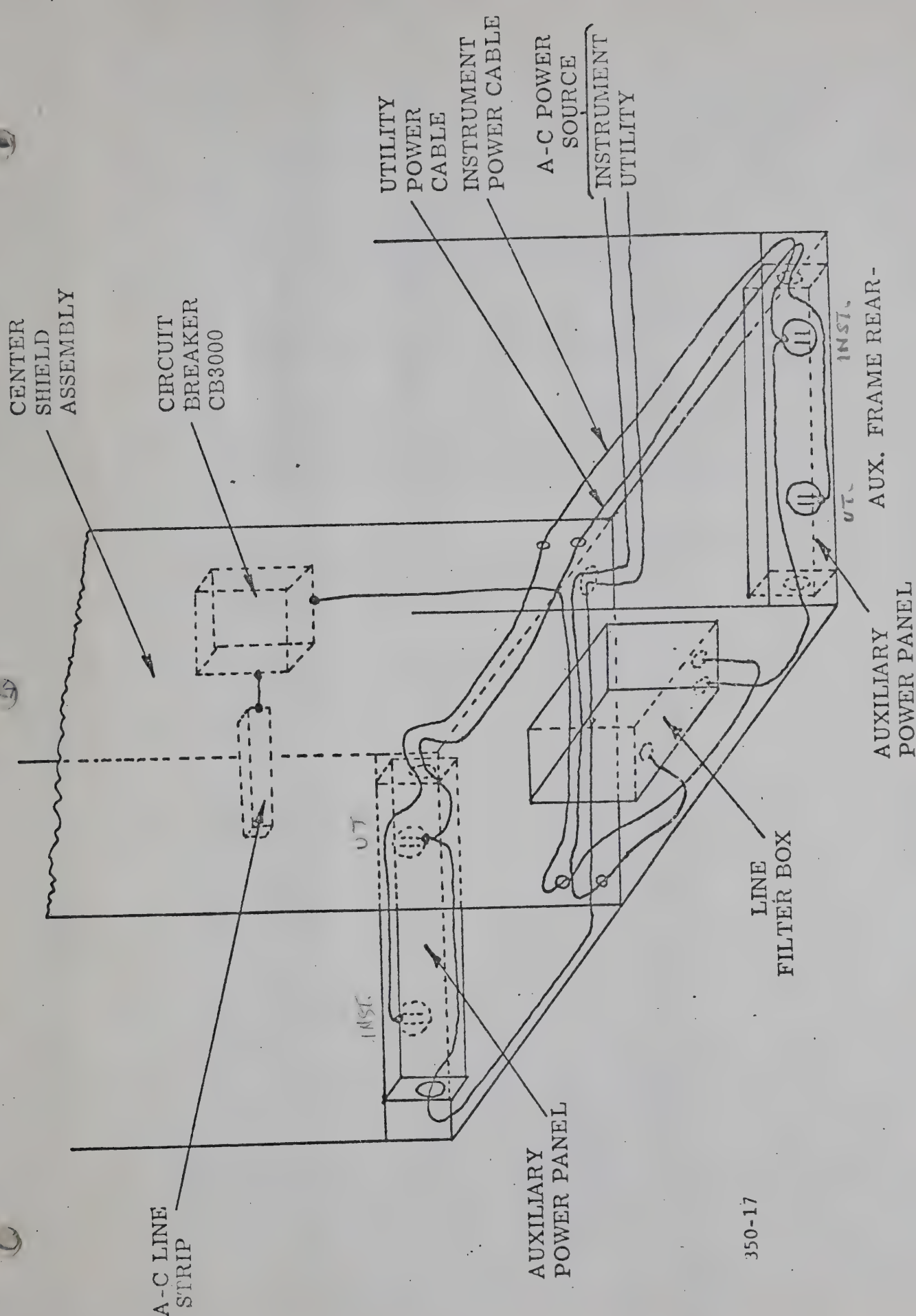


Figure 6-2. Utility and Instrument Power, Cable Connection Diagram

350-17

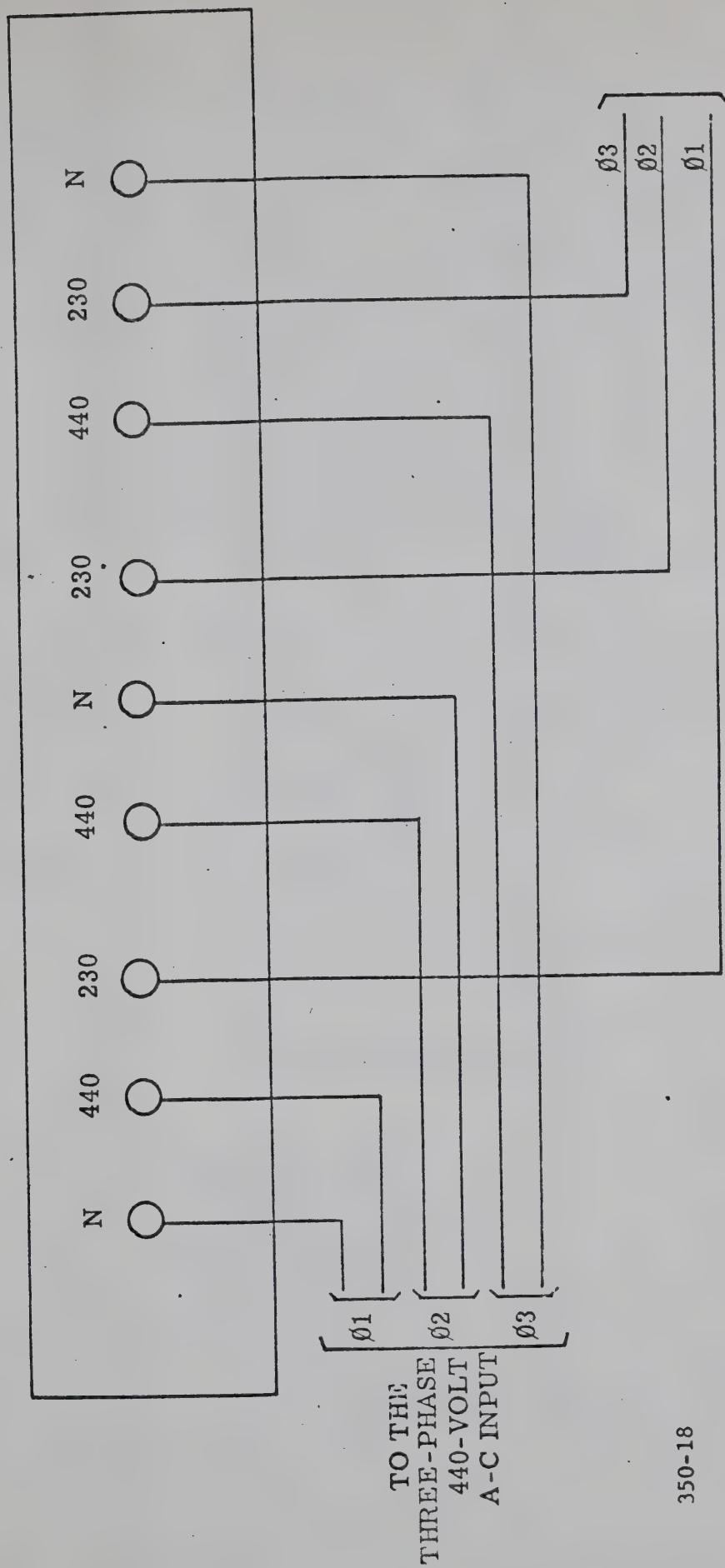


Figure 5-3. Transformer T802, Cable Connection Diagram

350-18

TO FEEDTHRU
BOLT IN THE
FIBER BOARD
IMMEDIATELY
ABOVE T800

← CA412-25-15.00 — ○ N

E1006 ← CA412-2-6.00Y — ○ 3400

E1005 ← CA412-2-6.00Y — ○ 3400

E1004 ← CA412-2-6.00Y — ○ 3400

TRANSFORMER
T800

NOTE

CABLE CA682/A WIRE
CONNECTIONS TO TRANS-
FORMER T800 ARE SHOWN
FOR A 220 VOLT LINE.
CONNECTIONS MUST BE
MADE ACCORDING TO AC
LINE VOLTAGE AVAILABLE.

350-19

TO
LINE
FILTERBOARD

Ø1
Ø2
Ø3

CA682/A

TO WIRE
HARNESS

BLK
BLK
WHT/RD & RD

○ 250
○ 240
○ 230

220 ○
210 ○
0 ○

250 ○
240 ○
230 ○
220 ○
210 ○
0 ○

250 ○
240 ○
230 ○
220 ○
210 ○
0 ○

Figure 6-4. Transformer T800, Cable Connection Diagram

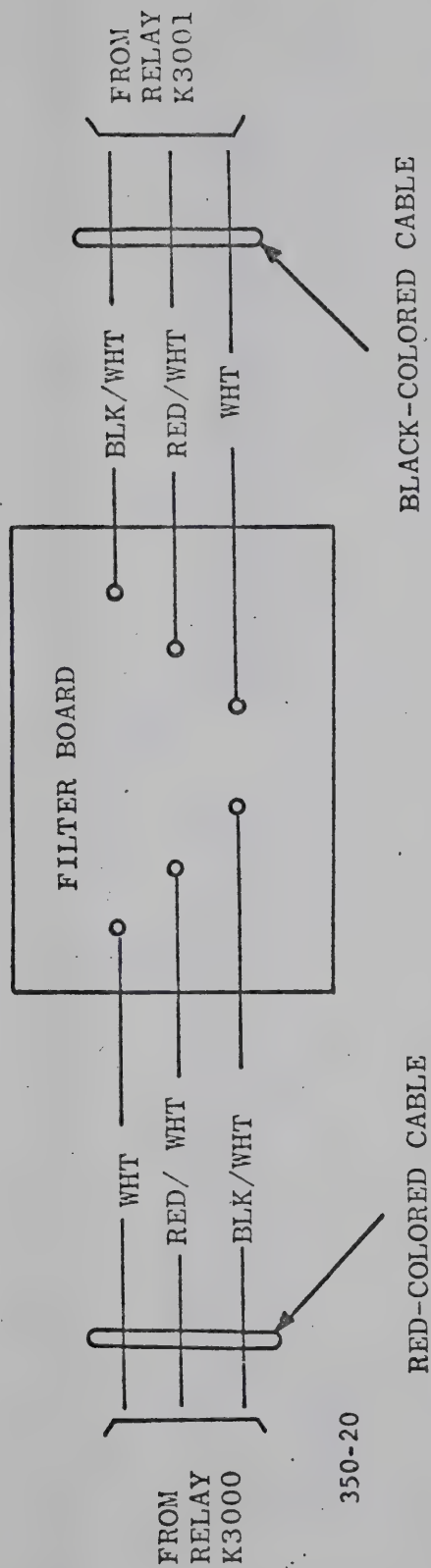
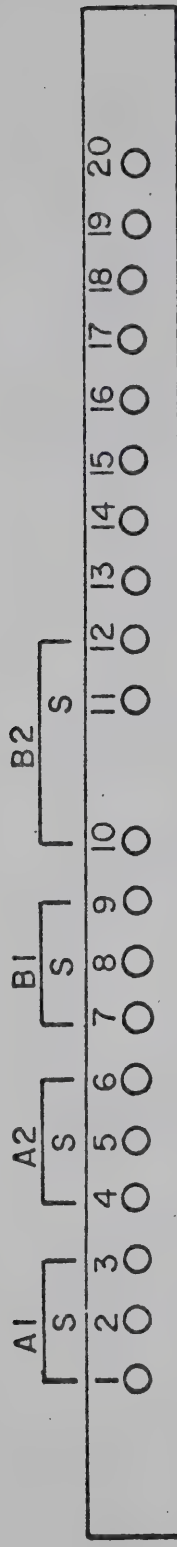


Figure 6-5. Filter Board, Cable Connection Diagram

350-21 AUDIO CHANNELS



ID-322

S = SHIELD

Figure 6-6. Terminal Board TB4005 (Audio Inputs), Cable Connection Diagram

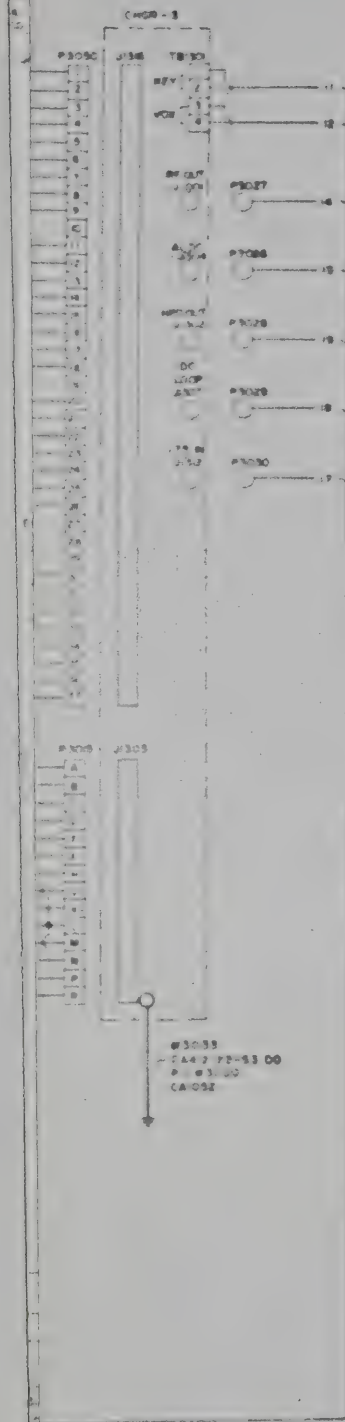
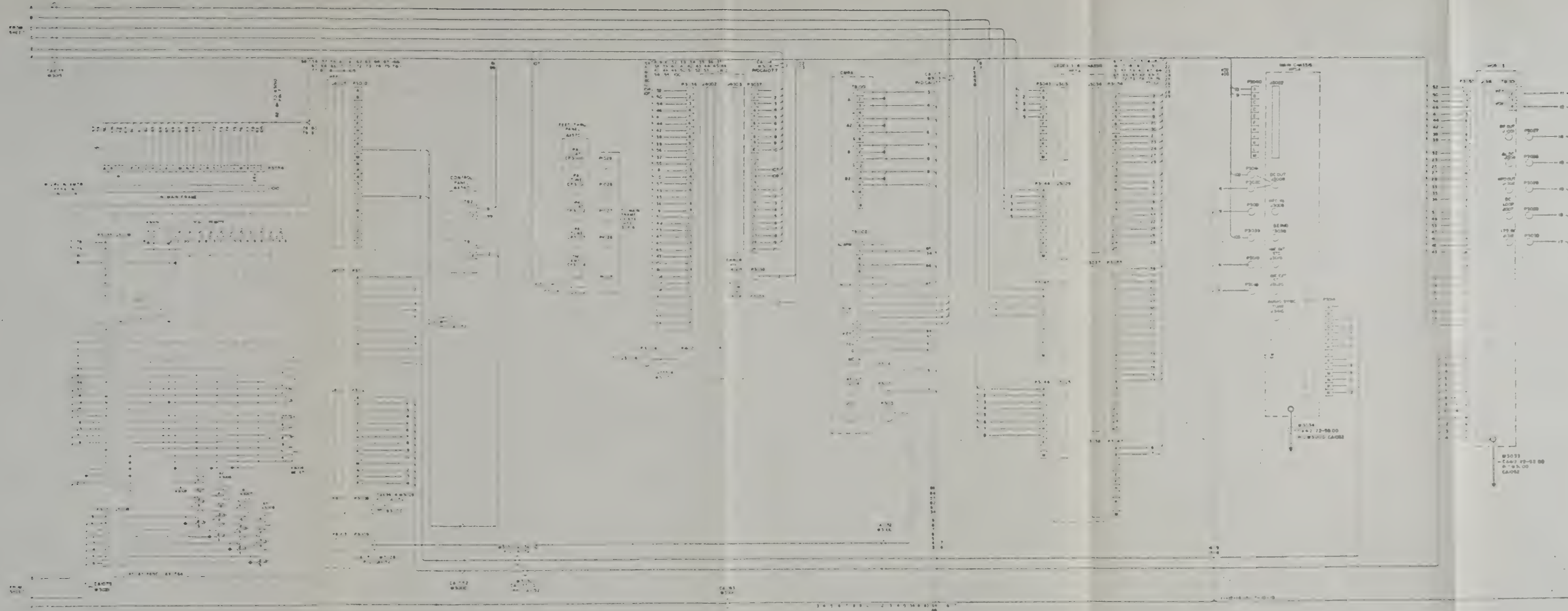


Figure 6-7 Auxiliary Frame Drawers,
Inter-equipment Cabling
Diagram (Sheet 2 of 2)



372-4 54125)

Figure 6-7 Auxiliary Frame Drawers, Inter-equipment Cabling Diagram (Sheet 2 of 2)

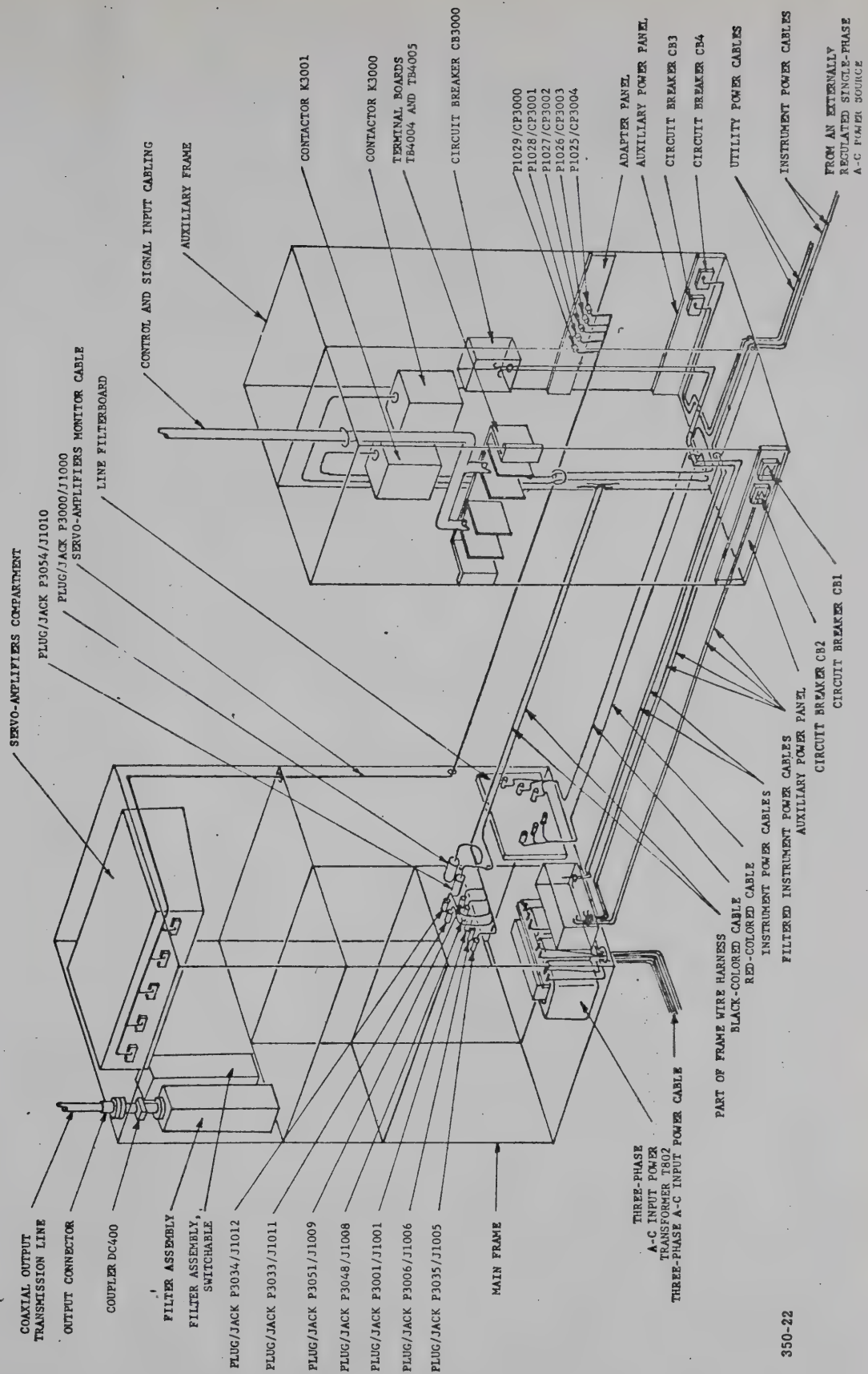


Figure 6-8. Inter-Frame, Input, and Output, Cable Connection Diagram

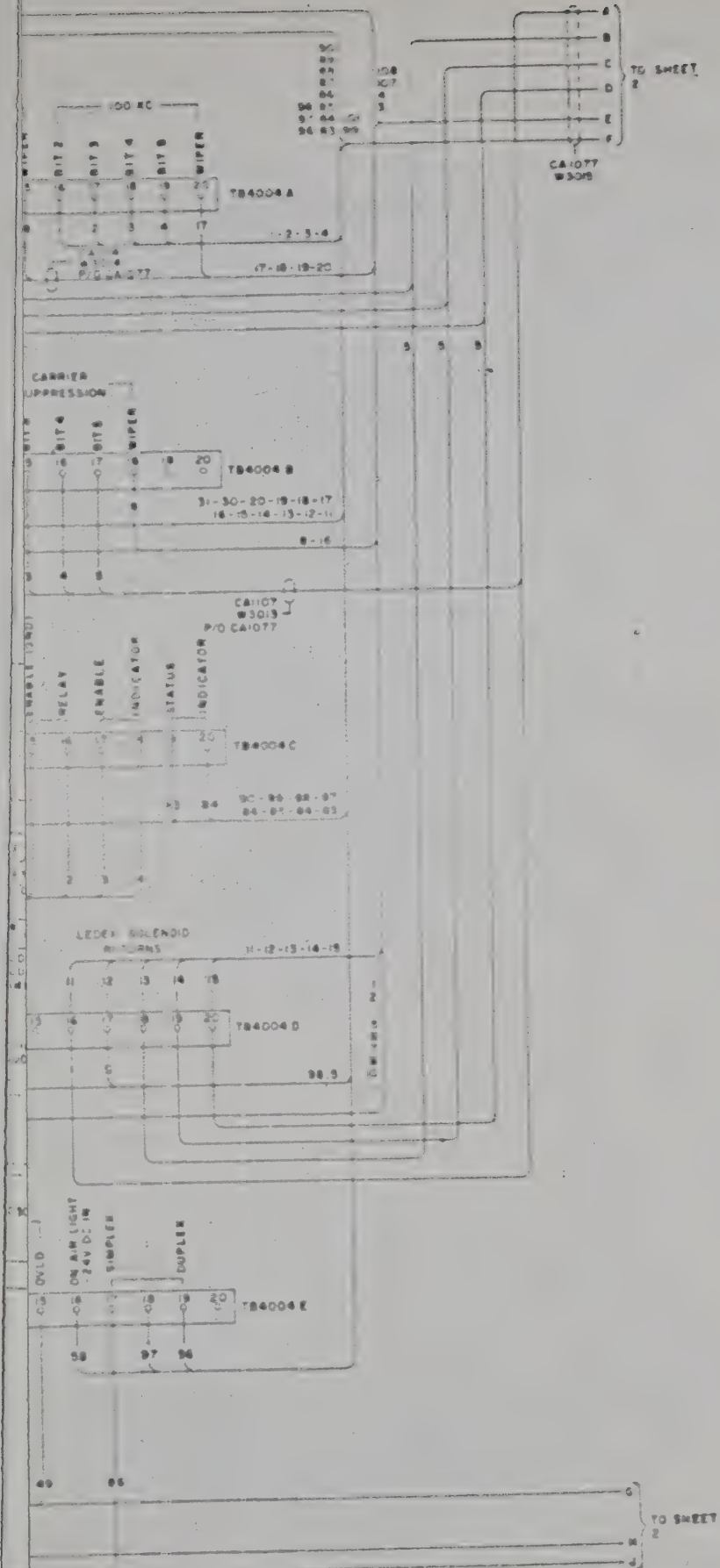


Figure 6-7 Auxiliary Frame Drawers,
Inter-equipment Cabling
Diagram (Sheet 1 of 2)

Figure 6-9. Detailed Part of Inter-Frame Cabling, Cable Connection Diagram

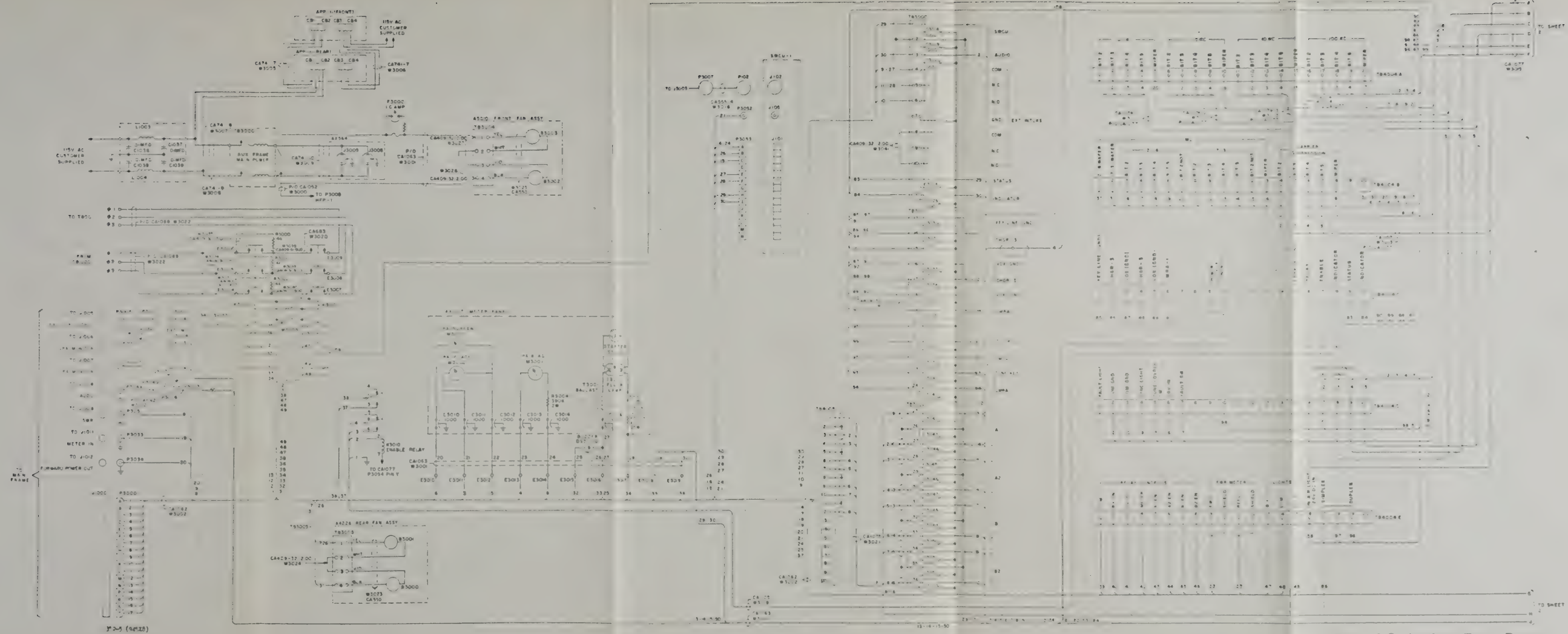


Figure 6-7 Auxiliary Frame Drawers, Inter-equipment Cabling Diagram (Sheet 1 of 2)

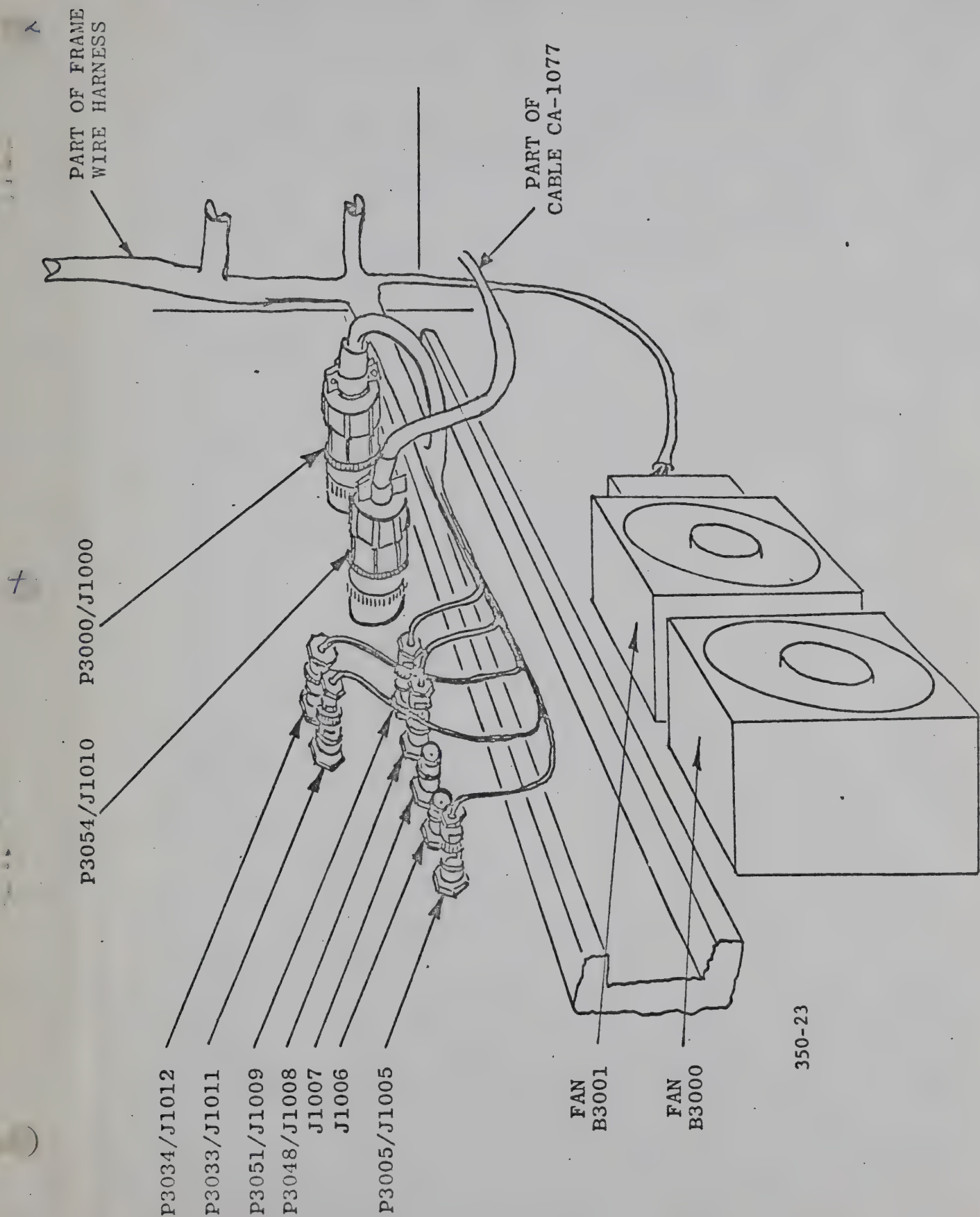


Figure 6-9. Detailed Part of Inter-Frame Cabling, Cable Connection Diagram

350-23

8. Drive RF gain to 300 milliamps
(IPA plate current). Do not exceed
1 (one) amp plate current. Peak
Tuning Capacitor to not more
than 1 (one) amp. Dip Grid + Peak Plate

DIAL SETTINGS

| | |
|---------------|---------|
| PA Screen | 1200 |
| PA Bias | 300 |
| PA Plate | 7.5 |
| Fil Pri | 230 |
| PA Screen Cur | 5 |
| PA Plate Cur | 300 mls |
| PA Plate RF | 3.5 |
| PA Output | 3KW |

